APRIL 1958

RAILWAY TRACK and STRUCTURES

A Simmons-Boardman TIME-SAVER Publication

For System-wide Protection at these vital points!

Install—

NATIONAL RAILWAY SPRING LOCK WASHERS

NATIONAL Railway Spring Washers are designed to keep bolts tighter by maintaining constant bolt tension, absorbing shocks and protecting rail ends. They withstand the extreme stresses and strains of continuous, heavy traffic... reduce maintenance costs system-wide!

Serving Industry Since 1886

THE NATIONAL LOCK WASHER COMPANY — NEWARK 5, NEW JERSEY, U.S.A.

A Complete Line of Railway Spring Washers

DE-WEED..... with the Kershaw HEAVY DUTY Ballast Regulator

When a farmer wants to get rid of weeds, he plows them under. You can plow under your weeds at no extra cost with the Kershaw Heavy Duty Ballast Regulator used as a Track Patrol.

No work trains or chemicals are involved. Just plow under weeds along your ballast shoulder using the scarifying teeth on the Reversible Wing Assembly on the Ballast Regulator. It enables you to plow with the machine traveling in either direction.

The Kershaw Heavy Duty Ballast Regulator used as a Track Patrol also is used to scarify the ballast shoulder, break up cemented ballast at tie ends and provide drainage on the ballast shoulder, eliminating the need of cleaning shoulder ballast.

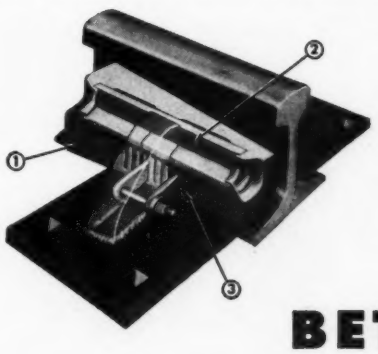
The Kershaw Track Broom and the Kershaw Chemical Spreader Car solve de-weeding problems in classification yards and terminals. The Track Broom sweeps car drippings and other material from between the tracks, depositing it on the side of the track. The Chemical Spreader Car then provides easy, economic spreading of chemicals between the rails, controlling vegetation in classification yards.

KERSHAW MANUFACTURING CO. INC

P. O. Drawer 1711 Montgomery, Alabama

How this brace can brace!

Rail keeps growing heavier, trains keep rolling faster. But no matter to Model 811 Rail Brace; it just puts its shoulder to the job, and budges not a smidgen. No thrust or impact ever knocks the 811 out of whack!



Sound design provides the reason. At the bottom of it all is a steel plate, roughly similar to a regular tie-plate. Welded to the plate is the forged bracing member. A specially shaped wedge (1), containing an angular spring-steel piece (2), fits snugly into place between rail web and brace. (The brace is machined, where it makes contact with the wedge, with a horizontal slope of 1 in 16, and a vertical slope of 1 in 8.)

When the wedge is driven sufficiently tight to compress the spring 1/32 in., the pawls attached to either side of the brace are turned down into the slots (3) milled into the wedge. This locks the whole assembly together, and makes it virtually integral with the running rail. That rail just has to stay put!

Adjustments can be very easily made, as needed. The only tool required for either installation or adjustment of the 811 is a spike maul or a hammer.

A Bethlehem engineer will be glad to explain the Model 811 Rail Brace in full detail. You can reach him through any Bethlehem sales office.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

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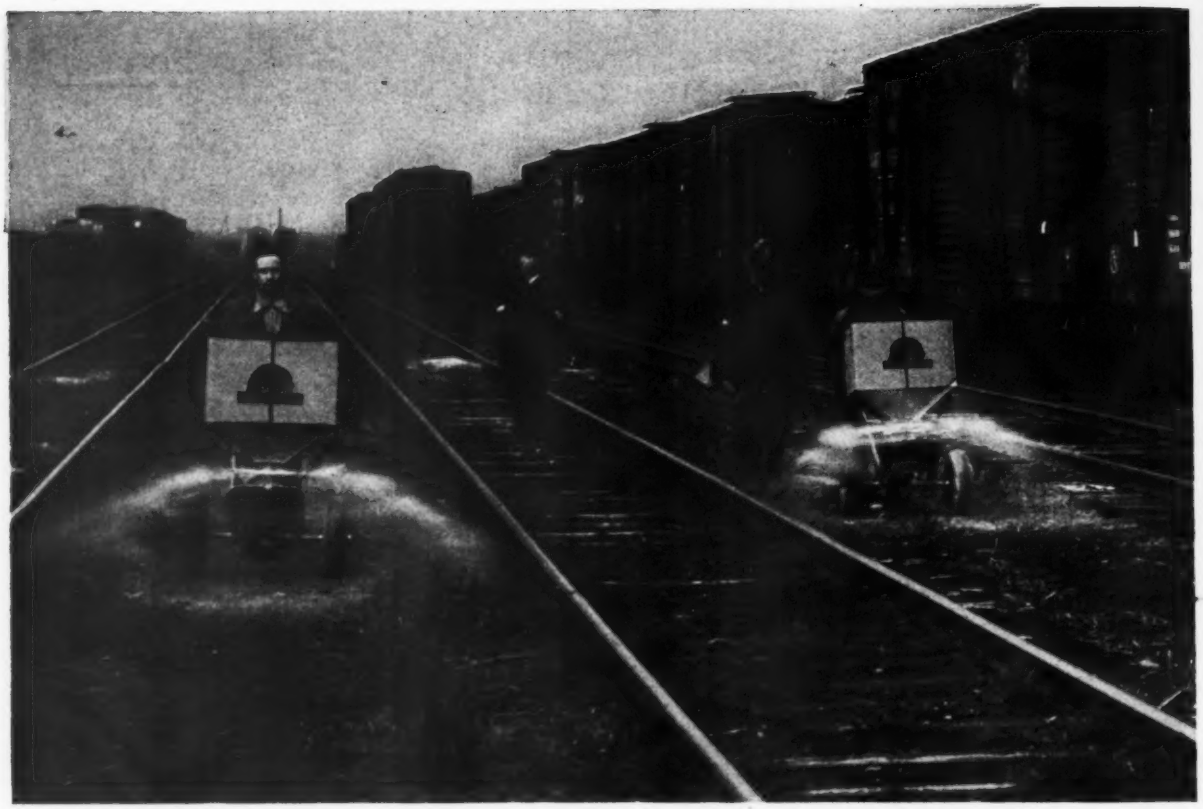
Published monthly by Simmons-Boardman Publishing Corporation, Newark, New Jersey, with editorial and executive offices at 79 West Monroe Street, Chicago 3, Illinois; 30 Church Street, New York 7, New York. Subscription prices: to railroad employees only in the United States and Posessions, and Canada, one year $2.00. Re-entry of second class mail privileges authorized at Newark, N. J. Volume 54, No. 4.



ONE DOSAGE of DRY *Nalco* H-174 for ALL-YEAR WEED CONTROL

Low dosage — usually a small fraction of that of other "apply dry" formulations — is a big advantage you get with H-174. And it's easily explained: Nalco H-174 has an unusually high concentration of powerful killing ingredient. *You get much more killing power with much less chemical to transport and apply!*

Nalco H-174 is effective whenever you apply it, but you can get full advantage from this powerful herbicide by spreading a single dosage about 2 weeks *before* weeds begin to emerge. H-174 will keep them down all year long, eliminating unsightly and inflammable weed debris, preventing re-growth and mid-season seeding.

Spreading *dry*, granular Nalco H-174 is a fast, simple operation. No mixing, spraying, or dilution . . . ready to use as it comes from bag or convenient shaker box . . . distribute by hand or with mechanical spreaders . . . For better weed control, plan on using Nalco H-174!

H-174 is one of a complete line of Nalco weed control chemicals, both dry and liquid, in wide use by railroads and industries throughout the world.

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RAILWAY
TRACK and STRUCTURES

Published monthly by the
SIMMONS-BOARDMAN PUBLISHING CORPORATION

Executive Offices
30 Church St., New York 7

Editorial Offices
79 W. Monroe St., Chicago 3

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Branch offices: 1081 National Press Bldg., Washington 4, D.C.; Terminal Tower, Cleveland 13; 214 Terminal Sales Bldg., Portland 5, Ore.; 244 California St., San Francisco 4; 1151 W. 6th St., Los Angeles 17; 3908 Lemmon Ave., Dallas 19, Tex.; Jericho Manor, Jenkintown, Pa.; 530 Sixth Ave., Pittsburgh, Pa. Foreign representatives: Sibley-Field Publishing Co., Ltd., 8/9 Clerkenwell Green, London E.C. 1, England; Georg J. Linder, continental European representative, (16) Frankfurt a Main, Wittlesbacher Allee 60, West Germany.

Subscription price to railroad employees only in the U.S., U.S. possessions and Canada, $2.00 one year, $3 two years, payable in advance and postage free. All other countries, $8 one year, $16 two years. Single copies 75c. Address correspondence concerning subscriptions to R. C. VanNess, director of circulation, 30 Church St., New York 7.

Member, Audit Bureau of Circulations (ABC). Indexed by Engineering Index, Inc.

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DON'T MISS . . .

What's being done about driver-burned rails? To get the answer to this question *RT&S* has made a comprehensive survey among practically all the larger roads. The results reveal sharp differences of opinion on the practice of repairing burned rails by welding.

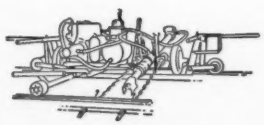
. . . in the May issue

One operator pulls 7000 spikes in a day's time with . . .

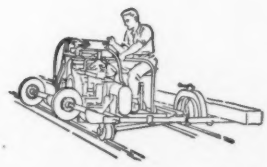
Fairmont

THE FAIRMONT W84 SERIES B HYDRAULIC SPIKE PULLER (shown on the left) is a fast, one-man spike puller capable of working both sides of both rails . . . pulling up to twenty spikes a minute. Your best man can't come close to that with a claw bar! What's more, the W84 sets off easily on the track shoulder . . . and is remarkably economical to operate and to maintain. Whether it's a large gang or small . . . extra or B. and B. gang . . . whenever spikes have to be pulled, the W84 is the machine for the job. Start a program now to modernize and mechanize every gang with a W84.

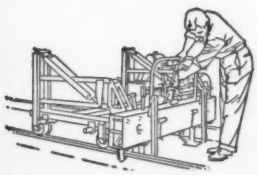
Other Tie Renewal Equipment by Fairmont



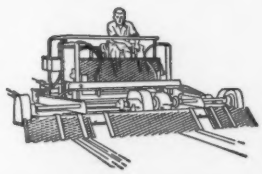
W68 SERIES A HYDRAULIC TIE REMOVER removes ties at an average rate of approximately one per minute. Ruggedly built with a minimum of moving parts. Requires only two-man operation.



W90 SERIES A TIE HANDLER inserts or removes ties quickly and requires only two men for operation. Simple design and sound construction. Self-propelled. Two-way operation.



W86 SERIES A HYDRAULIC RAIL LIFTER features a spring-counterbalanced lifting arm, welded steel supporting frame and a direct-driven hydraulic pump. Two-man track removal.



W87 SERIES B TIE BED SCARIFIER with one operation can dig a tie bed a minute, to a controlled depth at right angles to rails. Assembly and drive are hydraulically operated.

W83 SERIES B TIE NIPPER (not illustrated) features a simple linkage and lever which guarantee positive opening and closing of hooks. The handle can be placed in three different positions.

FAIRMONT
RAILWAY MOTORS, INCORPORATED
FAIRMONT, MINNESOTA

MANUFACTURERS OF BALLAST MAINTENANCE CARS, DERRICK CARS, OIL SPRAY CARS, GROUTING OUTFITS, TIE RENEWAL EQUIPMENT, RAIL RENEWAL EQUIPMENT, WEED CONTROL EQUIPMENT, HY-RAIL CARS, TRACK MOTOR CARS, PUSH CARS AND TRAILERS.

Helps from Manufacturers

The following compilation of literature—including pamphlets and data sheets—is offered free to railroad men by manufacturers to the railroad industry. To receive the desired information, write direct to the manufacturer.

POWER UNITS. The B-125 power unit is described in a new eight-page, two-color catalog, designated MS-1247, which is now available. Various components of the unit are illustrated and two large cutaway views occupy the center spread position in the catalog. Included also are specifications, and a list of special equipment available to expand the versatility and use of the engine. (Write: *Tractor Group, Allis-Chalmers Manufacturing Company, Dept. RT&S, Milwaukee, Wis.*)

GRADER ACCESSORIES. A new four-page, two-color folder, entitled "Accessories and Attachments for Allis-Chalmers Motor Graders," has recently been made available. The folder, designated MS-1161, describes and illustrates the extra equipment which is applicable to A-C Model 45 and Model D motor graders. (Write: *Construction Machinery Division, Tractor Group, Allis-Chalmers Manufacturing Company, Dept. RTS, Milwaukee 1, Wis.*)

ELECTRIC PLANTS. A six-page, two-color folder F-103 has been made available recently which describes and shows specifications for the AK, AJ, LK and CCK series portable electric plants. Entitled "One Man Can Do the Work of Three," the folder also illustrates the use of such machines for making hedge shearing and grass trimming easier and faster. (Write: *D. W. Onan & Sons, Inc., Dept. RTS, Minneapolis 14, Minn.*)

SPOT TAMPING. A description of a spot-tamping jack assembly for use on the Jackson Track Maintainer is given in a six-page, two-color brochure designated TM 1257-5MPCP. The brochure also describes the advantages of the tamping machine and shows the general specifications for both the tamper and the jack assembly. (Write: *Jackson Vibrators, Inc., Dept. RTS, Ludington, Mich.*)

LOADING. An account of how the use of a Cary-Lift Loader helped a manufacturer increase his production is given in a recently released four-page brochure. This literature also lists the main features of this machine. (Write: *Pettibone Mulliken Corporation, Dept. RTS, 4700 W. Division St., Chicago 51, Ill.*)

SAFETY PRODUCTS. Several products, which contribute to greater safety by the use of certain chemicals, are described in a recently released four-page, two-color brochure. Basic ingredients provide resistance to fire, acids and slipping. (Write: *E. I. duPont de Nemours & Co., Inc., Grasselli Chemicals Division, Dept. RTS, Wilmington 98, Dela.*)

METAL BUILDINGS. A new two-color, 16-page catalog has recently been printed to show the latest designs in Parkersburg metal buildings. The catalog covers installations in sizes ranging from tool sheds to manufacturing plants. (Write: *The Parkersburg Rig & Reel Co., Division of Parkersburg-Aetna Corporation, Dept. RTS, Parkersburg, W. Va.*)

MACHINE MAINTENANCE. A booklet, called Maintenance Guide for Caterpillar No. 933, No. 955 and No. 977 Traxcavators, has been prepared especially for the operators of these units. The 30-page booklet, with 106 full-color illustrations, supplements more detailed information in the "Operation and Maintenance Instructions." Written in narrative form, it describes fuel-system care, lubrication and service intervals, cooling-system care, and the rebuilding of worn parts. (Write: *Caterpillar Tractor Company, Dept. RTS, Peoria, Ill.*)

METAL FINISHES. Recently made available is an eight-page, two-color booklet which deals with the most prevalent causes of corrosion on railway structures. It also describes proper surface preparation and correct painting procedures for maintenance-of-way structures and equipment. (Write: *The Sherwin-Williams Company, Dept. RTS, 101 Prospect Ave., S.E., Cleveland 1 Ohio.*)

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Just Ask the Railroads That have used

SPENO BALLAST CLEANING

SPENO RAIL GRINDING

The repeat business which we have enjoyed through the years proves the value of our service and prompts our slogan.

Just Ask the Railroads That have used us!

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RAIL GRINDING

GOODYEAR INDUSTRIAL PRODUCTS
G.T.M.-Specified
Molded Rubber Railroad Crossing Pads
A
B
C
A Thick pad of solid, tough rubber for excellent resistance to cutting, wear, weather and low temperatures
B Heavy steel bridge-type reinforcement imbedded in rubber to carry pounding loads
C Tough integral flanges seal tightly against tracks when pad is sprung into place

Photo courtesy, Erie Railroad Company, Cleveland, Ohio

Now—rubber makes the grade at R.R. crossings

In the past two and a half years, an estimated one million cars and trucks—traveling at a 40 to 60 mph clip—have pounded over this grade crossing in West Salem, Ohio. Add the countless trains that have roared through at 70 mph—and the fact that it's never needed a penny's worth of maintenance is a real eye opener.

Credit belongs to the unique steel-reinforced rubber pads bridging the crossing. Developed by the G.T.M. —Goodyear Technical Man—and his colleagues, they will not splinter or shatter like timber. They're impervious to changing weather that alternately buckles and softens black-top. They absorb the shock of passing trains rather than crumbling like concrete. They're flexible—so they don't shear off or break like metal grating. And they're quiet!

They have many never-before advantages, too: Each unit has a flexible, rubber lip that seals out water and dirt that would befoul the ballast. Additional units are easily added at ends of a crossing if the road is widened. And it stays *smooth*—indefinitely.

Can you afford, then, to overlook a material that will slash such a huge chunk out of your grade crossing maintenance costs? Its savings have already been *proved* in a number of several-year-old installations. For details, write Goodyear, Industrial Products Division, St. Marys, Ohio, Los Angeles 54, California, or Akron 16, Ohio.

RUBBER RAILROAD CROSSINGS BY

GOODYEAR

60th GOODYEAR ANNIVERSARY

THE GREATEST NAME IN RUBBER

News about people

BANGOR & AROOSTOOK—Vinal J. Welch, assistant engineer, has been promoted to principal assistant engineer with headquarters as before at Houlton, Me.

A native of Monson, Me., Mr. Welch, who is 31, received his Bachelor of Science degree in civil engineering from the University of Maine in 1950. That year he joined the Erie as levelman at Buffalo, later serving as transitman, construction inspector, and general foreman. He entered the service of the BAR in February 1957. During World War II, Mr. Welch served in the U. S. Navy aboard a mine sweeper in the Far East.

CHICAGO & NORTH WESTERN — R. W. Bailey, division engineer of the Dakota division, with headquarters at Huron, S. D., has been promoted to engineer of scales and work equipment with headquarters in Chicago. He succeeds **Harry Mayer,** who has retired after more than 31 years of service with this road. **L. G. Tieman,** acting chief draftsman in the engineering department at Chicago, has been appointed assistant division engineer of the Iowa division with headquarters at Boone, Iowa, succeeding **R. D. Nelson.** Mr. Nelson has been promoted to division engineer of the Dakota division at Huron, to replace Mr. Bailey.

Mr. Bailey, who is 37, came to the North Western in 1946, after receiving a degree in mechanical engineering from the University of Illinois. After serving as engineering draftsman and instrumentman, he was appointed supervisor of scales and work equipment at Chicago in 1950. Five years later he was made acting division engineer of the Wisconsin division. After a short time in this position he was appointed division engineer of the Dakota division at Huron.

A graduate civil engineer from the University of Illinois, Mr. Nelson served in the navy during the last war before coming to the North Western in 1946 as a rodman at Boone, Iowa. In 1947 he was appointed an inspector at Boone, and the following year he became an instrumentman, serving at Boone, Chadron, Neb., and Chicago. In 1953, he was appointed assistant division engineer at St. Paul., being promoted to division engineer at Sioux City in 1956. He had been serving as assistant division engineer at Boone since April, 1957.

Mr. Tieman, 37, is a veteran of six years in the navy during the past war and has a degree in civil engineering from the University of Minnesota. He started with the North Western in 1948 as a rodman. In 1953, he was appointed assistant supervisor of bridges and buildings at Chicago, becoming assistant engineer in 1956. Later in the same year he was appointed acting chief draftsman.

CANADIAN PACIFIC—William Dunlop, division engineer, Medicine Hat, Alta., transferred to Regina, succeeding **D. H. Dunphy,** resigned to join the engineering staff of the Board of Transport Commissioners. **H. J. Gordon,** special engineer, Calgary, Alta., was named division engineer, Medicine Hat.

DELAWARE & HUDSON—A number of changes were announced last month incident to the reorganization of the engineering department by the consolidation of the Pennsylvania-Susquehanna and the Saratoga-Champlain division engineers' offices into the chief engineer's office at Albany, N. Y. Matters formerly handled by the division engineers will now be under the jurisdiction of the engineer maintainance of way. These additional changes have now been announced:

C. C. Tubbs has been appointed office engineer at Albany. **W. J. Shimer,** roadmaster at Carbondale, Pa. has been appointed track supervisor at that point and the position of roadmaster has been abolished. **J. M. Lucy,** roadmaster at Plattsburgh, N. Y., has been appointed track supervisor at the same point, and the position of roadmaster has been abolished. **W. E. Bailey,** roadmaster, with headquarters at Oneonta, N. Y., will have jurisdiction over the Pennsylvania-Susquehanna division, and **T. W. Hasslinger,** roadmaster with headquarters at Albany, will have jurisdiction over the Saratoga-Champlain division.

J. J. Connor has been appointed assistant engineer of structures and bridge and building master, with headquarters at Albany.

NORTH SHORE—Harold G. Mason, superintendent of way, structures and power of the Chicago, North Shore & Milwaukee, has been elected executive vice-president.

SOUTHERN—J. Fred Watkins, bridge and building supervisor at Atlanta, Ga., has been transferred to Valdosta, Ga., to succeed **Ralph F. Cothran,** who has been transferred to Knoxville, Tenn.

Walter F. Tolley, Jr., rail supervisor at Greenville, S. C., has been appointed track supervisor at Laurel, Miss., and **Billy G. Smith** has been appointed assistant track supervisor at Wilton, Ala. **David E. Peterson, Jr.,** track supervisor at Spartanburg, S. C., has been appointed trainmaster at Chamblee, Ga.

William L. Hoffman, formerly a track supervisor and bridge and building supervisor, has been promoted from trainmaster at Danville, Ky., to assistant superintendent at Birmingham, Ala. **Leon H. Smith, Jr.,** formerly bridge and building supervisor and track supervisor, has been promoted from assistant trainmaster at Asheville, N. C., to trainmaster at Princeton, Ind. **George S. Baron,** formerly a track supervisor, has been promoted from assistant trainmaster at Birmingham, Ala. to trainmaster at Selma, Ala.

SANTA FE — C. H. Sandberg, assistant bridge engineer of the system, has been promoted to bridge engineer, system, to succeed **R. A. Van Ness,** whose retirement was announced in the February issue. **H. A. Patton,** computer at Chicago, has been promoted to engineer of inventories with the same headquarters, succeeding **E. W. Falanders,** who has retired.

Mr. Sandburg, 56, was born in Minneapolis, Minn., and obtained a Bachelor of Science Degree in civil engineering at the University of Minnesota in 1926. In the same year he entered railroad service with the Santa Fe as a bridge designer at Chicago. From October 1928 to June 1929 he again studied at the University of Minnesota under a research fellowhip. He then returned to the Stana Fe as an assistant engineer at Chicago. He continued in this position until March 1943 except for a period during 1940 when he served as bridge construction engineer on the Western Lines. In 1943 he was advanced to assistant bridge engineer of the system and continued in this position until his recent promotion to system bridge engineer.

C. J. Cosner, right-of-way agent, Coast Lines, Los Angeles, has been appointed valuation engineer, Coast Lines there, succeeding **M. V. Anderson,** deceased. **G. L. Muchow** has been appointed right-of-way agent to succeed Mr. Cosner.

SOO LINE—Paul J. Isakson, division engineer, Winnipeg division, Thief River Falls, Minn., has been transferred to the Minnesota division, Enderlin, N.D., succeeding **R. C. Postels,** promoted. **Warren B. Peterson** has been named division engineer at Thief River Falls to succeed Mr. Isakson.

Biographical briefs

Lester E. Gingerich, 56, who was recently promoted to chief mechanical officer of the Pennsylvania at Philadelphia (*RT&S*, Jan., p. 10), graduated from Gettysburg College and entered railroad service in 1922 as a rodman on the Pennsylvania later serving as assistant supervisor of

(*Continued on page* 66)

Lester E. Gingerich
PRR

C. H. Sandburg
Santa Fe

Concentrated BORASCU®

WEED KILLER

FOR WEED-FREE SAFETY ABOUT STORAGE YARDS...

FOR WEED-FREE SAFETY ABOUT TIMBER STRUCTURES

FOR WEED-FREE SAFETY ABOUT SIGNALS—SWITCHES

FOR WEED-FREE CLASSIFICATION YARDS—TERMINALS

Concentrated BORASCU is the one weed killer used by more roads than any other nonselective herbicide

When one weed killer leads the railroad field, you can bet it's a top performer. For roads demand many things from a weed killer. They want maximum control of all vegetation for extended periods of time, economy, ease of application, and ready availability. And those are the very features Concentrated BORASCU offers you! With this granular borate material, there is nothing to mix—no water to haul. Any section hand, with Concentrated BORASCU, can destroy weeds anywhere—safely. This herbicide is nonpoisonous, nonflammable, noncorrosive to ferrous metal. It can solve all your toughest weed problems. Write!

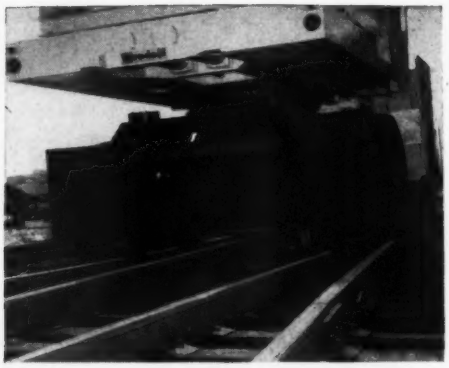
AGRICULTURAL SALES DEPARTMENT

United States Borax & Chemical Corporation

PACIFIC COAST BORAX COMPANY DIVISION

630 SHATTO PLACE • LOS ANGELES 5, CALIFORNIA

CONCENTRATED BORASCU IS A "20 MULE TEAM" BRAND PRODUCT



Gradall's Self-Compensating Guide Wheels—both front and back—are raised and lowered pneumatically by push-button, providing easy alignment for fast track positioning. They compensate automatically as the tires move up and down when crossing over switches, frogs, etc. Only when Gradall leaves the track and moves on its rubber tires, are the guide wheels raised. Gradall's big tires enable it to be easily driven on the highway, right of way, or cross-country. It can quickly climb over rails at any angle to either cross over or straddle the track.

Gradall's self-compensating guide wheels give you highway mobility on your track

Costly work trains can be eliminated entirely when your new Railroad Gradall goes on the job. If track being worked must be cleared for traffic, the Gradall quickly and easily moves off the track onto the shoulder or across to the other track on two-track systems. Less than 5 minutes after trains have passed —Gradall is busily back at work!

Present owners report their Railroad Gradalls average 6 to 7 on-the-job hours each working day because the machine can stay at the work site overnight—only returning to the yards when the job is finished.

Why not let us arrange for a field demonstration of the new Railroad Gradall on your maintenance-of-way jobs? Write Gradall Division, Warner & Swasey Company, Cleveland 3, Ohio.

Gradall handles complete maintenance-of-way, both on and off track every day . . . all year long

Dig and Clean Ditches	Backfill
Slope Cuts and Fills	Excavate
Lay Rail	Materials Handling
Align Track	Crane Work
Clean Track	Install Culvert
Place Rip-Rap	Clear Land Slides

Gradall®
A Product of
WARNER & SWASEY
CLEVELAND 3, OHIO

Complete maintenance-of-way with one machine . . . a GRADALL

HOW WOOD PRESERVATION WITH PENTA PAYS OFF!

● Today, more and more men with maintenance on their minds will tell you . . . it's good business to protect lumber with PENTA treatment. Here's why:

1. COSTS NO MORE — Service records show PENTA treatment gives poles, cross ties and other lumber for exposed structure extra long life. Yet PENTA treatment costs no more than ordinary preservatives.

2. WON'T LEACH OUT — Because PENTA is an oil-borne rather than water-soluble preservative, it doesn't leach out, leaving wood vulnerable to rot and termites.

3. CLEAN TO HANDLE — Construction and maintenance supervisors know that workmen handle clean wood faster, more efficiently — and with fewer kicks!

Reichhold is a major supplier of PENTA to the wood industry and to wood users. If you haven't done so yet, investigate this modern method of protecting your lumber investments — write for the name of your nearest Reichhold distributor of PENTA.

Creative Chemistry . . .
Your Partner in Progress

Synthetic Resins • Chemical Colors • Industrial Adhesives • Phenol
Hydrochloric Acid • Formaldehyde • Glycerine • Phthalic Anhydride • Maleic Anhydride
Sebacic Acid • Ortho-Phenylphenol • Sodium Sulfite • Pentaerythritol
Pentachlorophenol • Sodium Pentachlorophenate • Sulfuric Acid • Methanol
REICHHOLD CHEMICALS, INC., RCI BUILDING, WHITE PLAINS, N.Y.

the NEW

Here is the world's highest tamping efficiency

In dollars per foot ot perfectly tamped track, the *Matisa Speedtamper* will give your M/W budget a real assist.

This machine retains the unbeatable Matisa principle of vibration-compaction tamping with the machine load always on tamped track, but now has many *PLUS* features:

Now hydraulically positioned tamping units for positive action, faster production. The *most efficient use of hydraulics has been applied throughout the machine.*

Now V-belt drives with multiple disc clutches — adds safety, cuts maintenance, eliminates gears and noise.

Now instantaneous split-head operation switches from speed surfacing to deep tamping without interruption.

Now pneumatic control valves with assured separate air supply from a small compressor on the diesel engine.

For details, write for the New *Matisa* Speedtamper brochure.

Lease and optional purchase plans available.

MATISA EQUIPMENT CORPORATION

1020 Washington Avenue • Chicago Heights, Illinois

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RAILWAY
TRACK and STRUCTURES

News notes...

. . . a résumé of current events throughout the railroad world

In recent weeks three brand new "automatic" freight classification yards were unveiled by as many roads. On February 27 the Burlington's new $4 million yard at Cicero (Chicago), Ill., was put through its paces for the benefit of press representatives. A few days later the New York Central held dedication ceremonies for its Robert R. Young yard at Elkhart, Ind., which represents a whopping $14 million investment. Then came the Santa Fee with the announcement that its new yard at Corwith (Chicago) was in business.

•

Railroad freight is moving faster between Chicago and California. The trend got underway when the Chicago & Eastern Illinois announced a five-day schedule to California in conjunction with the Cotton Belt and Southern Pacific. This was one day faster than previously. Fifth morning schedules have since been announced by Santa Fe, Milwaukee, Illinois Central, North Western, Burlington, Rock Island and Southern Pacific.

•

There's a chance of a substantial reduction in taxes levied against railroads in New Jersey. Five railroads could save between $6 million and $7 million a year on non-mainline property taxes if proposals now before the state legislature are approved. The Lackawanna, Pennsylvania, Jersey Central, Lehigh Valley and Erie are now paying some $14 million a year on non-mainline properties in the state. Now the Tax Policy Commission has come forward with a recommendation, that taxes on such property be reduced 50 per cent.

•

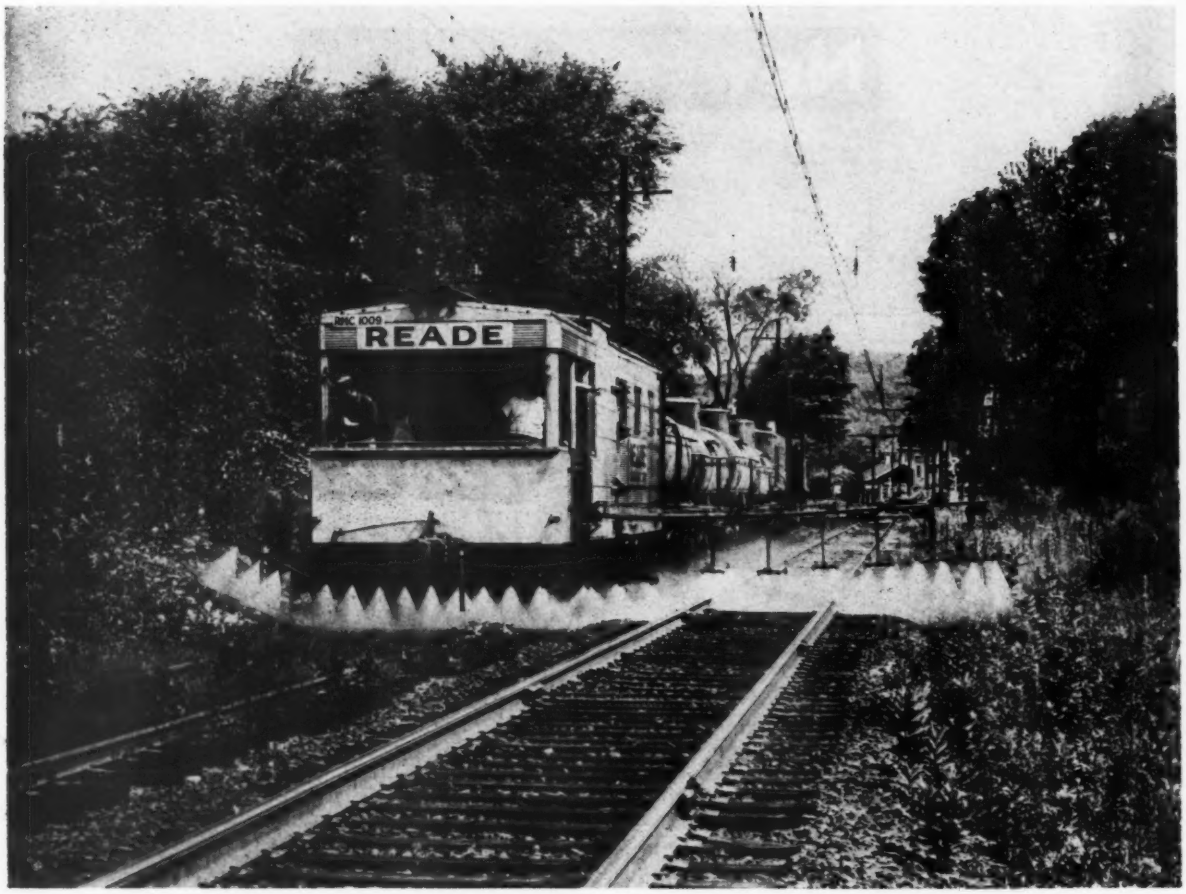
Buyers have been found by the New York Central for at least 53 of the 406 passenger stations it put up for sale eighteen months ago. In most cases the road has leased back space for its own needs. In every case, however, the "nominal rental" the Central is paying the new owners is less than the taxes it once paid on the property.

•

The largest machine ever designed to load coal into the hold of a ship has been purchased by the Chesapeake & Ohio. Built in West Germany, the machine can load 6,000 tons of coal an hour. It will be installed at the road's new $37-million coal dock in Toledo, Ohio.

•

Railway Maintenance Corporation announced early in March it had received orders for track maintenance equipment totalling well over $2 million in value. According to R. M. Jenner, vice president of the company, "these orders are significant in that they suggest the awareness on the part of railroad management of the dramatic cost savings which can be obtained through mechanized track maintenance equipment."



"My budget is cut 40%—

am I justified in eliminating weed killer this year?"

This question has been asked by several maintenance men recently.

I can think of no better answer to the question, than to refer to an experience some years back when a similar condition existed on the Burlington.

H. R. Clark, the Chief Engineer, had been denied chemical for a period of years and finally sent this message to the officer who held the purse strings—

"This year we take the weeds or the weeds take the railroad." The use of chemical was resumed, and at the end of the growing season he said to me—

"We had our roadbed practically clean. Investment in use of chemical really involved prevention rather than kill. "It has cost our railroad over a million dollars, which we had over a period of years invested, to bring the roadbed to this point.

"All of this has now been lost. We must now start all over again and it will take us perhaps three or four years to get back where we were when chemical was discontinued.

"Never again, while I am Chief Engineer, will I permit the elimination of chemical weed killer."

There are ways and means of preventing uncontrolled growth at a lesser expenditure than made in recent years when income was high.

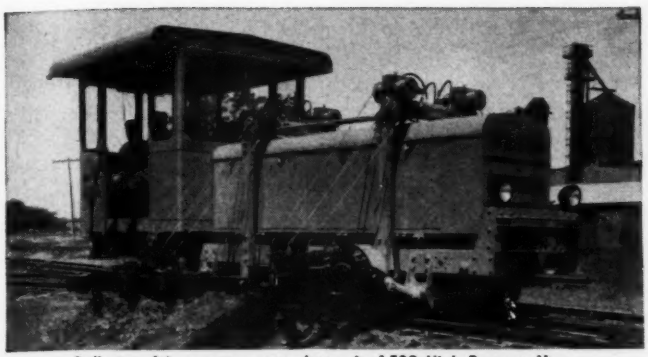
May we outline the procedure to you?

Chas. H. Reade, President

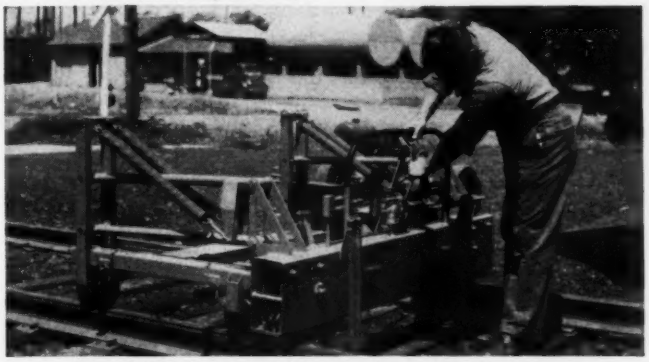
READE MANUFACTURING COMPANY, INC.

Jersey City 2, N. J.

WORKS: JERSEY CITY • MINNEAPOLIS • CHICAGO • BIRMINGHAM • TEXARKANA, ARK. • KANSAS CITY • STOCKTON, CAL.



Ballast maintenance car uses Aeroquip 1509 High Pressure Hose Lines on hydraulic attachments, plus 2601 Low Pressure Hose Lines on lube oil and engine fuel lines.



This rail lifter has dependable Aeroquip Flexible Hose Lines on hydraulic track lifting equipment.

Hydraulic lines of any length can be replaced right on the job using Aeroquip Hose and Reusable Fittings.

Aeroquip Hose Lines are used for engine fuel lines and tie puller hydraulic attachment lines.

Cut Costs! Simplify Maintenance!

Make All Fluid Line Replacements Quickly with Aeroquip Flexible Hose and Reusable Fittings

Save 20% to 60% of hose line costs! Use Aeroquip Hose Lines with Detachable Fittings that can be used again and again. Replacement lines can be assembled quickly, easily, in the shop or on the job. A minimum inventory of bulk hose and spare fittings meets all requirements. Write today for full information.

2651 Hose for hydraulic, fuel and lube oil, air and water lines. For pressure up to 3000 psi. In sizes from ¼" to 3".

1509 Hose for high pressure hydraulic, lube oil and air lines up to 5000 psi. Available in sizes from ¼" to 2".

2601 Hose for low pressure diesel fuel and hot lube oil lines with pressures up to 1000 psi. In sizes from 1" to 2".

Aeroquip

REG. TRADEMARK

AEROQUIP CORPORATION, JACKSON, MICHIGAN

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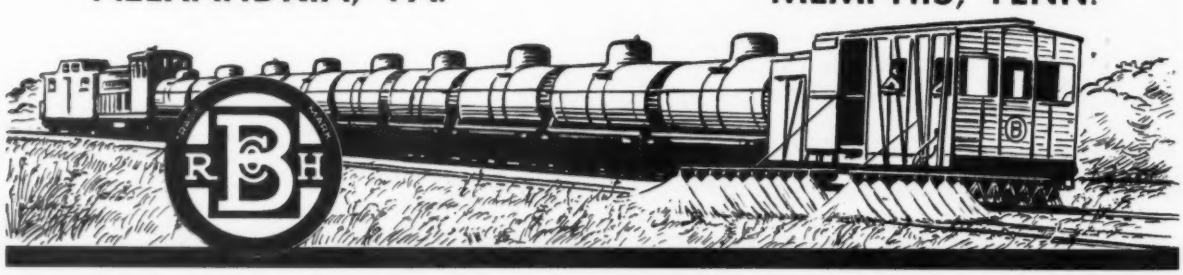
"I'm Running a Man-Sized Outfit Now!"

Sure you are, son! You're at the controls of the finest spray equipment on rails. And those Bogle tank cars, back there, are full of bad news for the weeds and brush. Take these essentials . . . the right chemicals, efficient spray equipment, experienced personnel who know how to get the most out of both . . . and they add up to the most dependable and economical control of roadway and right-of-way growth.

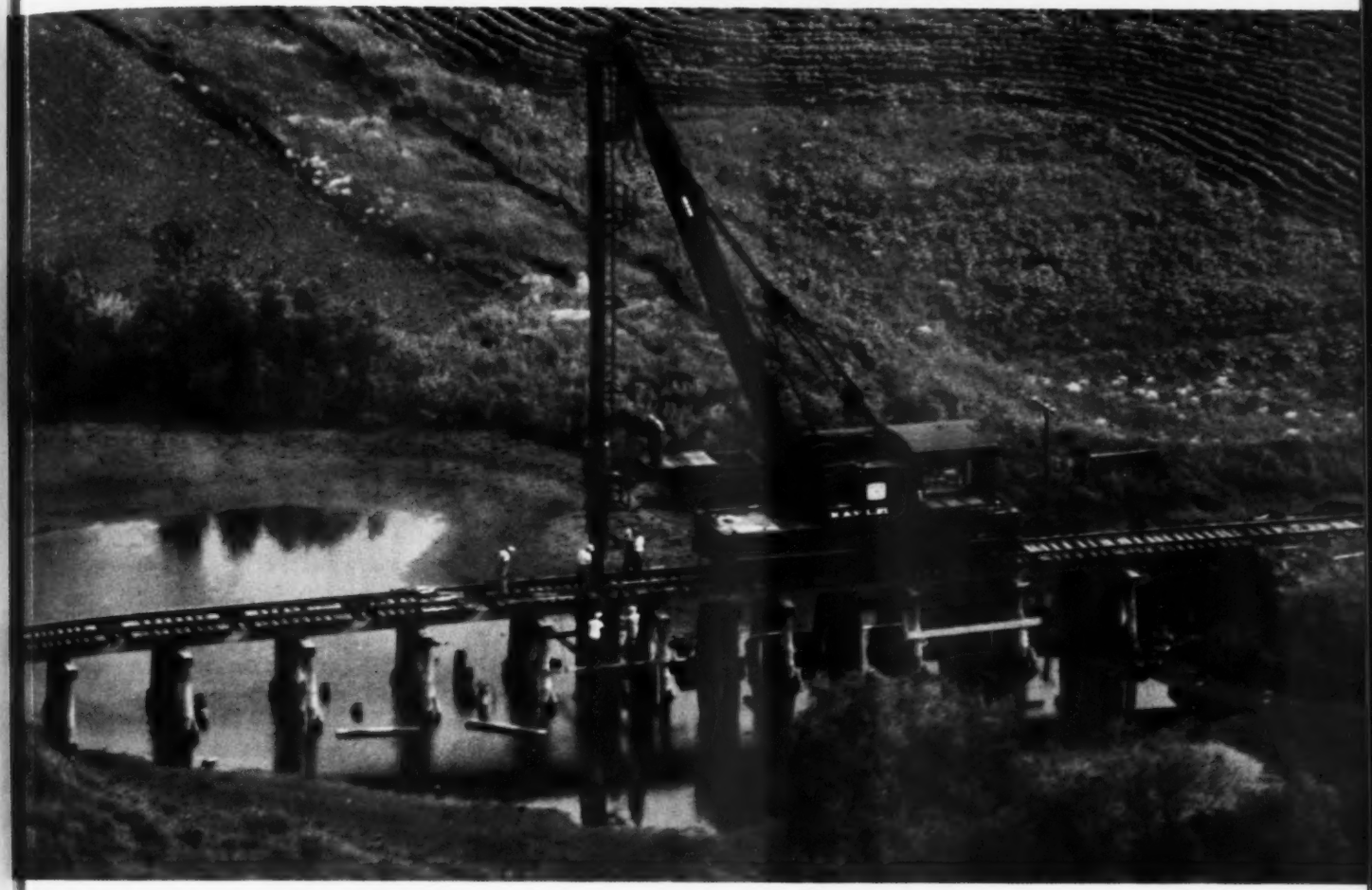
Complete Weed and Brush Control Service

THE R. H. BOGLE CO.

ALEXANDRIA, VA. **MEMPHIS, TENN.**



this is an **orton** *160-ton diesel wrecker* **but...**



EVERY ORTON CRANE has:
... **ALL** power shafts carried on sealed anti-friction bearings— NO exceptions.
... **ALL** motion entirely independent.
... **NO** jaw clutches— not even in travel mechanism.

today *it's driving piles!*

ORTON VERSATILITY is exemplified by this *combination* diesel wrecker-pile driver. *YOUR* machine, built to *your* requirements ... delivered for *less* than a "production line" crane!

ORTON EXPERIENCE always gives you the very latest *proved* design. ORTON, in more than fifty years of building the finest cranes, has been *first* with Torque-Control, *first* with air-operated controls, *first* to recognize that each handling job is unique.

So, when you consider cranes, consider ORTON *first* ... it *is* first!

orton

CRANE AND SHOVEL CO.
608 S. Dearborn Street
CHICAGO 5, ILLINOIS

THE MOST POWERFUL NAME IN CRANES

Dear reader:

RAILWAY
TRACK and STRUCTURES

". . . Perhaps we should not be so smug . . ."

A state of mind prevails in this country with respect to engineering and maintenance-of-way practices in Europe and other foreign countries. If we were to describe that state of mind in one word, we would have to say it is on the "negative" side.

We would have to use this term because, generally speaking, American railroad engineers are not too much impressed by foreign practices. The prevailing notion seems to be that such practices abroad are inferior to those in use in the United States. This impression has come about partly because of basic differences in conditions. In any discussion of this subject someone is almost certain to mention that labor is cheaper elsewhere than it is here. Someone else will point out that wheel loads in foreign countries are much lighter than ours. And other fundamental differences in conditions will be brought out.

These differences are certainly valid reasons for variations in the design of tracks and structures and in the methods used to maintain them. That much must be conceded. But they are not sufficient reason for ruling out the possibility that practices may be found on foreign railroads that can be applied with profit in this country.

Occasionally we are jolted out of our complacency by some technological development abroad that indicates other peoples may not be as backward as we had supposed them to be. The success of the Russians in putting artificial satellites into outer space was such a development.

These developments can happen in railroading too. Last fall a delegation of C&O engineers, headed by T. F. Burris, chief engineer, had occasion to visit Germany on company business. While there they took advantage of the opportunity to inspect track construction and maintenance practices in that country and in France. In reporting on his observations before the recent AREA convention, Mr. Burris made these revealing comments:

"Somewhere during the past thirty years of my work in railroading, I had acquired a feeling that the railroads in the United States were about the best in the entire world, and that we had the best and most economical means of maintaining track. But, after listening to the chief engineer of the French railroads, whom I had the pleasure of talking with for about two hours, I began to think that perhaps we should not be so smug and that others have some good ideas too."

If we accept Mr. Burris' conclusion that there is much we can learn from European railroads, there is still the problem of communications to be overcome. To rely on reports of occasional visitors to Europe is not an adequate answer to the problem. What is needed is a systematic approach—one that will assure, as a regular procedure, the compilation and dissemination here of information on worth-while developments in Europe and elsewhere.

As a suggestion we might point out this is a project that could properly be initiated by the AREA. With its organizational resources, and assuming the support of the Association of American Railroads, a system for reporting on foreign developments could be worked out without too much difficulty. Let's start the ball rolling.

MHD

ATLANTIC COAST LINE CALLS ON A D9

TO BUILD SPEED INTO ITS MAINLINE

When Atlantic Coast Line Railroad wanted to build speed into its mainline track near Halifax, N. C., it assigned one of its Caterpillar D9 Tractors to the job. This is becoming standard procedure among railroads. When a big, important off-track job requires action and high production, the biggest single-engine tractor of them all gets the call.

The D9 can do jobs quicker and more efficiently than any other tractor in the world. Its powerful turbocharged engine delivers 320 horsepower at the flywheel. And the 'dozer capacity is a whopping 20 tons.

But most important, this production is built into a machine that is designed to stay on the job day in and day out. This machine wins preference because of such features as: choice of torque converter or the exclusive oil clutch, the constant mesh transmission, air-cooled brakes, precision-welded steel steering clutch case and frame unit, effective bellows-type final drive seals, and its tinker-free efficient fuel system.

Finally behind the D9 and all Caterpillar machines stand the nationwide services of the Caterpillar Dealer organization and Parts Depot. Wherever you work, quick service and quality parts are near at hand. You do not have to tie up capital in a big inventory of parts, because your dealer stocks them for you. Call him today for a demonstration on your job. Just tell him you want the equipment there.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

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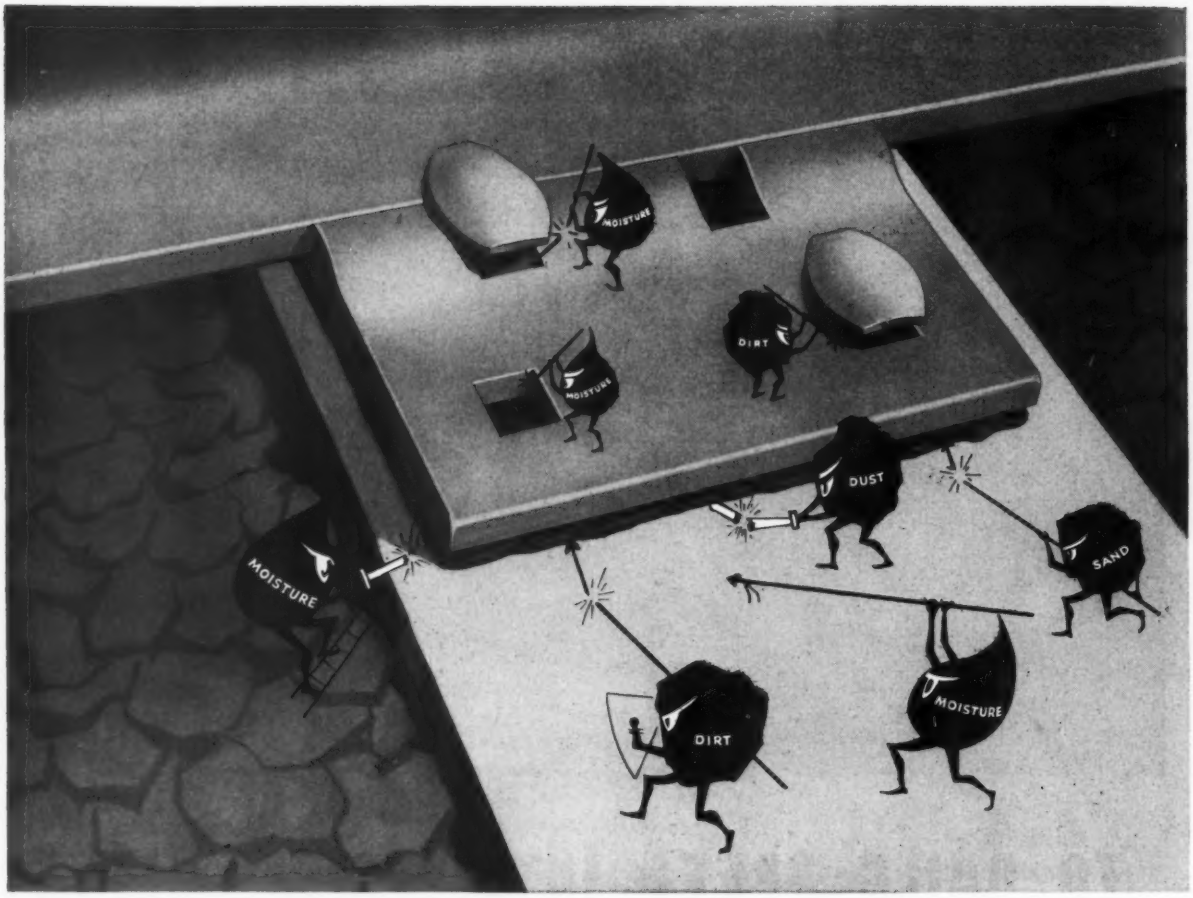
THE NO. 1
RAILROAD CONSTRUCTION
EQUIPMENT



Halt the charge of the Mite Brigade with BIRD SELF-SEALING TIE PADS

Bird Self-Sealing Tie Pads add years of life to your ties by positively sealing out destructive moisture and abrasive materials from the underplate area. The deadly Mite Brigade — moisture, dust, sand, dirt, grit, platform sweepings, etc. — cannot penetrate the seal. They cannot cause breakdown of the supporting power of the tie or the holding power of the spike-hole wood.

Bird Self-Sealing Tie Pads are the *only* tie pads whose durable and effective seal with the tie has been *proved* by years of in-track experience. You can slash your tie costs at least 50% with Bird Self-Sealing Tie Pads. Write for interesting booklet to Bird Tie Pads, East Walpole, Massachusetts, Department HTS-4.

Bird Self-Sealing Tie Pads are Recommended for:

BRIDGE DECKS • CURVES • SWITCH TIES • HIGHWAY, GRADE CROSSINGS AND OTHER PAVED AREAS • CROSSING FROGS • INSULATED JOINTS • WITH SMALLER TIE PLATES • PILE CUTOFFS • THROUGH-STATION PLATFORMS • OUT-OF-FACE INSTALLATIONS IN RAIL-LAYING PROGRAMS • SANDY LOCATIONS • ALL OTHER AREAS WHERE TIE LIFE IS SHORT OR REPLACEMENT COSTS HIGH.

Buy the Best BIRD & SON inc. Established 1795 *Buy Bird*

BULLDOG anchor's two-way grip multiplies holding power

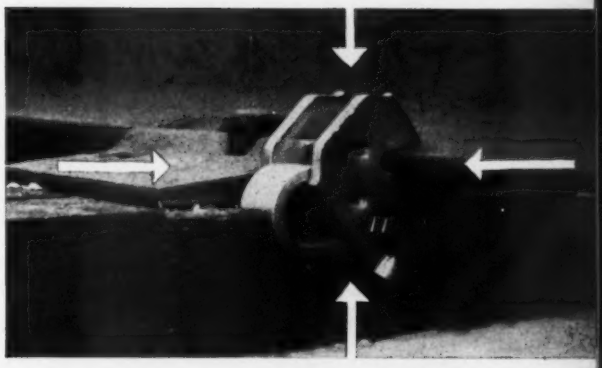
When you anchor track with the BULLDOG you get a tremendous bonus in anticreep protection. That's because the BULLDOG has a positive two-way grip.

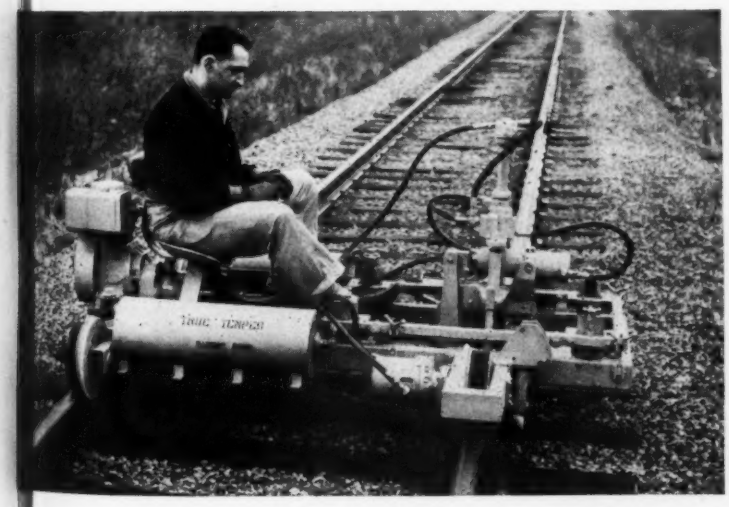
Two elements create this grip: a resilient steel spring and a double-jawed clamp of hardened steel. These two components, because of their integral design, grip the rail horizontally and vertically, and actually multiply and sustain the holding power of each other.

For the full story — or if you'd like to test the BULLDOG anchor on your own road — contact your True Temper representative, or write True Temper, Railway Appliances Division, 1623 Euclid Avenue, Cleveland 15, Ohio.

BULLDOG is factory-assembled as one unit that's easy to ship, handle and install.

Two-way grip multiplies holding power. Tie-bearing surface is broad, flat and deep. Clamp is angled to resist the heaving of frozen ballast.





New hydraulic machine installs anchors rapidly and accurately

True Temper's speedy new applicator positions each BULLDOG anchor snugly against the tie, holds it there, and uses smooth hydraulic power to "squeeze" it onto the rail base. It does not disturb gauge and does not "roll" the rail. Every anchor is a working anchor. Write for details.

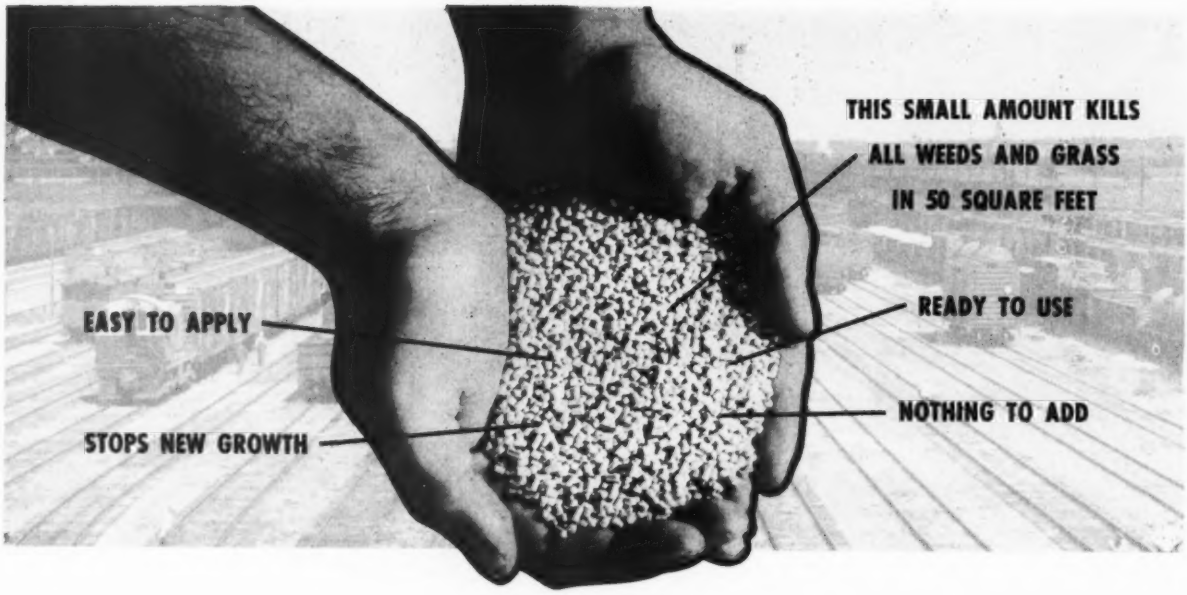
OTHER TRUE TEMPER RAILWAY PRODUCTS: Track Shovels • Ballast Forks • Weed Cutters • Hammers • Sledges • Scythes • Safety Rail Forks

TRUE TEMPER® BULLDOG RAIL ANCHORS *YOU CAN LOOK TO TT FOR LEADERSHIP*

NEW

CHLOREA® GRANULAR

WEED & GRASS KILLER



CHLOREA GRANULAR is a new form of Chlorea weed and grass killer. The dry, dustless pellets require no mixing . . . they are ready and easy to apply with simple equipment. These advantages are combined with the powerful "kill all" effectiveness already demonstrated by Chlorea in powder and liquid forms (used on railroads for the past several years).

Here are the important facts about Chlorea Granular:

1. Kills ALL weeds and grasses . . . stops new growth for a year or more.
2. Particularly intended for use in locations where large scale spray application is impractical . . . such as freight yards, terminals, storage yards, under bridges and trestles, around warehouses, stations and other similar places.
3. Easy to use . . . may be applied with any mechanical type spreader used for granular materials; or may be broadcast by hand.
4. Low application rate . . . about 400 pounds to the acre . . . less where only annual vegetation is involved.
5. Contains 3 proven chemicals . . . this combination kills deep rooted weeds and grasses, as well as shallow-rooted grasses, weeds and annual seedling growth.
6. Is non-poisonous and does not create a fire hazard when used as directed.

CHIPMAN CHEMICAL COMPANY
Bound Brook, New Jersey

SEND FOR FREE SAMPLE PACKET

CHIPMAN CHEMICAL COMPANY, INC.
Dept. 6B, Bound Brook, N. J.

Please send free Chlorea Granular sample and bulletin.

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COMPANY _____

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CITY _____ STATE _____

How the AREA looks in action

Conventions are made up of people. They are there primarily to hear reports and addresses and to participate in other programmed activities. That's the formal side. But every convention has its informal side, too. On these pages are pictured both sides of the AREA convention, held at Chicago last month.

PRESIDENT Ray McBrian, D&RGW, directed the business sessions.

● The Sherman hotel, Chicago, was the site of the AREA convention this year. The meeting was held there on March 11 to 13. Railroad men attending the meeting divided their time between the hotel and the Coliseum where the National Railway Appliances Association was sponsoring a huge display of machines, materials and devices of interest to AREA members.

The convention program, in addition to the reports of standing committees, included many addresses on timely subjects. But research was the special theme. At the opening session alone three addresses dealt with this subject.

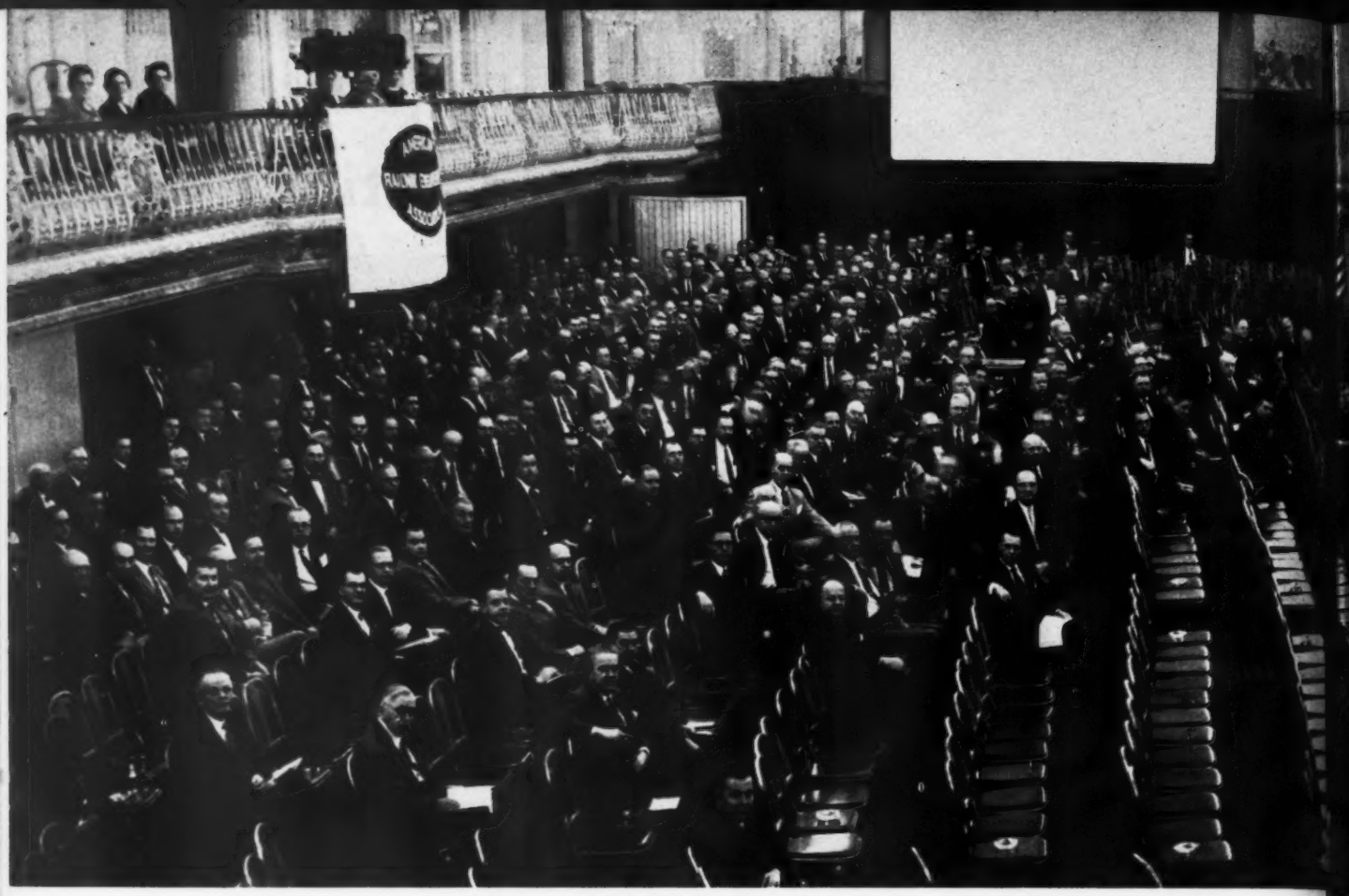
First, greetings and registration . . .

RECEPTION—F. O. Schafer, CB&Q, gets registration card from C. J. Code, PRR, while J. C. Jacobs, IC, looks on.

SIGNING IN—N. W. Hutchison, C&O, and J. D. Farley, Texas Company, fill out registration cards. Total registration was 2261.

ATTENTION PLEASE—R. G. Michael, WM Corp., talks over PA system. At left is E. M. Hastings, Jr., C&O, chairman, Reception committee.

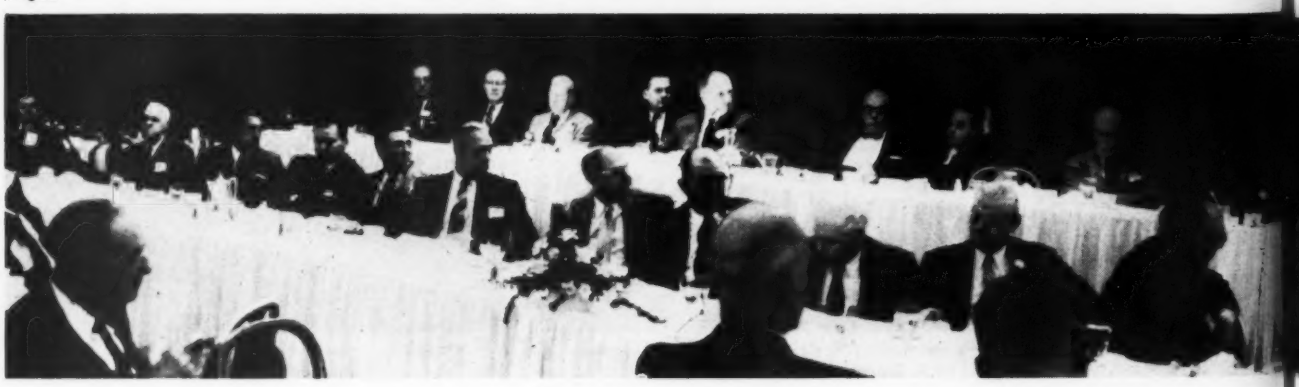
INFORMATION—Nancy Campbell, AREA staff, answered questions and passed out AREA literature.



The three days were filled with a

HUMP YARDS were the subject of a lively panel discussion. Wm. J. Hedley (far right), chief engineer, Wabash, acted as moderator. Panel members were: A. L. Essman, chief signal engineer, system, Burlington; Martin Amoss, superintendent yards and terminals, NYC; and G. W. Miller, regional engineer, CPR.

ANNUAL LUNCHEON was the outstanding social event of the convention. Shown here presiding at the speakers' table is President McBrian. Main feature of luncheon was an address by G. B. Aydelott, president, D&RGW. Seated at long table in foreground are chairmen of all the association's standing committees.



This view was taken at the opening session on Tuesday morning, March 11. During later sessions the hall was often filled to capacity.

RT&S COFFEE BAR was a favorite gathering place. Here guests line up for fruit juice, rolls and coffee. Bar was open from 8 to 10 am.

SEEN in coffee bar. Left—J. H. Brown and E. L. Anderson, both Frisco. Right—Royce Kershaw and W. T. Richards, both Kershaw Mfg. Co.

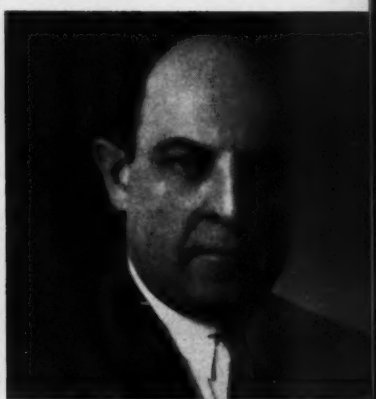
variety of activities

They were elected

B. R. Meyers, chief engineer, C&NW, Chicago, was advanced from senior vice-president to president, and E. J. Brown, chief engineer, CB&Q, was elected junior vice-president. F. R. Woolford, chief engineer, WP, and junior vice-president of the AREA, was automatically advanced to senior vice president.

New directors are: W. W. Hay, professor railway civil engineering, University of Illinois, Urbana, Ill.; W. M. Jaekle, chief engineer, SP, San Francisco; T. F. Burris, chief engineer, C&O, Huntington, W. Va.; and T. M. von Sprecken, assistant to chief engineer, SOU, Washington.

Members of the Nominating Committee are: W. L. Young, principal assistant engineer, N&W; H. B. Christianson, Jr., assistant chief engineer, CRI&P, Chicago; H. W. Kellogg, assistant chief engineer, C&O, Richmond, Va.; W. E. Cornell, engineer of track, Nickel Plate, Cleveland; and T. B. Hutcheson, chief engineer, SAL, Norfolk, Va.



LEFT—F. R. Woolford (WP), new senior vice pres.; B. R. Meyers (C&NW), president-elect. RIGHT—E. J. Brown (CB&Q), new junior vice pres.

Seen here and there at the convention hotel and at the Coliseum . . .

Representatives from the DT&I at the exhibit—A. F. Mallow, supervisor, L. W. Haydon, office engr., and H. W. Seeley, engr. M/W.

Also seen at the exhibit—J. S. Parsons, F. N. Synder and L. H. Jentoft, all of the Erie, and C. H. Anderson, Stanley H. Smith & Co.

From the SAL—R. E. Tew, assistant to chief engineer; T. B. Hutcheson, chief engineer.

C. H. Sandberg, bridge engineer, Santa Fe; W. H. Gardner, prin. asst. engr., Wab.

A. L. Tilsley, Colorado Fuel & Iron; W. H. Hobbs, chief engineer, Missouri Pacific.

Pennsylvania representatives—E. M. Hodges, district engineer; A. P. Kouba, assistant engr. struct.; M. L. Koehler, engr. b&b.

H. Gray Carter, chief engr. (ret.), Cent. of Ga.; T. M. von Sprecken, assistant to ch. engr., SOU; F. L. Etchison, ch. engr., WM.

E. J. Daily, Clark, Daily & Dietz; W. R. Wilson, assistant engr., Santa Fe.

R. G. Simmons, gen. rdm., CM St. P&P; V. C. Hanna, ch. engr., TRRA of St. Louis.

E. L. Gosnell, ch. engr. (ret.), Reading: Henry Seitz, structural engr., B&O.

John R. Rushmer, roadway engineer, and A. F. Ewert, div. engr.—both Santa Fe.

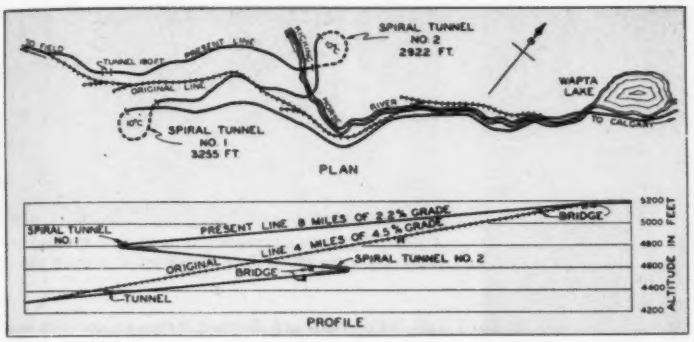
J. E. Fanning, asst. to ch. engr. (ret.), G. M. O'Rourke, asst. engr. M/W—both IC.

D. E. Rudisill, engr. M/W & struct., PRR; H. E. Michael, National Cylinder Gas Co.

It's a tough tunnel-lining job

Any way you look at it this project is a formidable undertaking. It involves the lining with concrete of the Canadian Pacific's two spiral tunnels. They're long and they're on 10-deg curves. Much of the rock is distorted, of variable hardness, stratified and unstable, and oozes water. And, just to make matters worse, train movements are frequent.

The what and why of the spiral tunnels



The spiral tunnels with which this article deals are located on the CPR's transcontinental main line in the Canadian Rockies. They get their name from the fact that the line, in passing through each of them, makes a complete loop and crosses itself, producing a spiral effect.

Here's how the tunnels came to be built:

As shown by the map, the original line in the vicinity of the tunnels was on a 4.5-per cent grade for a distance of 4 miles. The operating conditions created by this situation were extremely unsatisfactory. As a solution a project was carried out in about 1908 to reduce the grade to 2.2 per cent by lengthening the line to 8 miles. To gain this objective it was necessary to incorporate the two spiral tunnels in the alinement.

UNTREATED TIMBER lining was installed in the tunnels in 1912 and 1913. Lagging and cordwood packing were added along the walls as required to retain loose rock.

Two procedures when applying concrete lining

By **C. Neufeld**
Engineer of Bridges
Canadian Pacific
Montreal, Que.

● For six cold months, the two 50-year-old spiral tunnels of the Canadian Pacific near Field, B.C., lie in winter stillness. The silence is broken only by the roar of passing trains, the drip of seeping water, and the low moan of the winds.

Then, starting in May of each year, the shouts of men and the noise of their tools at work reverberate through them. The men, working in groups, are replacing the timber lining of the tunnels, one 3,255 ft long and the other 2,922 ft, with reinforced concrete. One group, if working more than 300 ft away from another, cannot see the other because the main track is laid through the tunnels on 10-deg curves.

This has been going on for four years. The work is the type which cannot be hurried. Trains are frequent. Limited work areas outside the portals, and the distance from the portals to the tunnel section under construction, add to the problem. Each day's work must be carefully planned and organized.

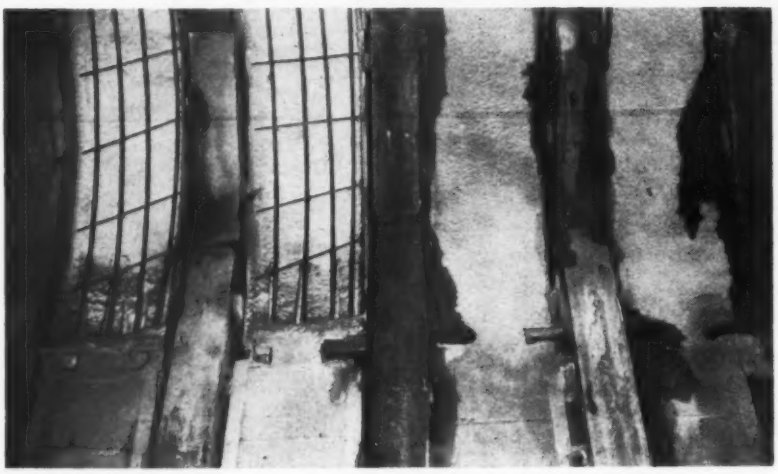
Also, the rock formations in each of the mountains through which the tunnels are bored, while similar, pose serious problems. They consist primarily of a crystalline limestone of a distorted nature with numerous stratifications of soft friable rock. In some places it varies from near horizontal to almost vertical. In other locations it will change from normal to almost parallel to the direction of the tunnel center line. In addition, the hardness of the rock varies every few feet, and water seepage adds to the difficulties.

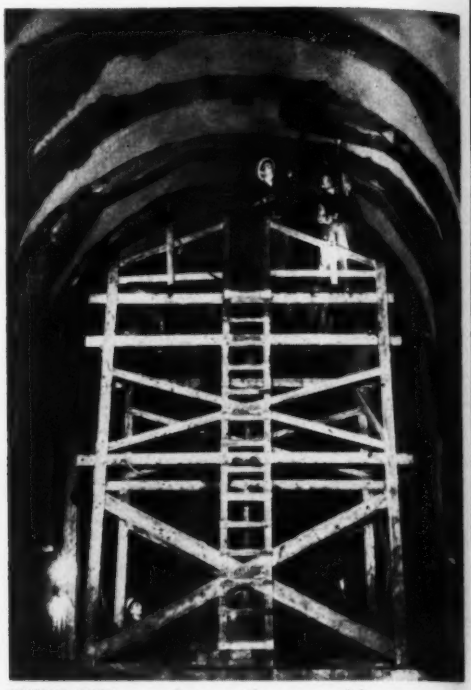
At the time the tunnels were constructed, only the more unstable sections of rock were retained by a lining. Concrete portals with short sections of concrete lining, totaling 484

This is the lining procedure followed at locations in the tunnels where

Substantial construction is needed in these locations to support the heavier loads. Forms are constructed between existing posts, reinforcing is installed and concrete is poured up to the arch springing. New ribs are formed by placing the arch reinforcing and by shotcreting. The old timber sets are subsequently removed, wire mesh fastened across the space, and approximately 4 in of shotcrete is added to seal the openings. Later, struts near the base and at the arch springing are concreted to complete the lining. The completed section is then pressure-grouted to fill any voids that may exist between the new lining and the rock walls and roof.

It should be noted that this procedure leaves the timber lining and cordwood packing in place behind the sets after the concrete lining is completed. An attempt was made to remove this material before concreting. However, it was found that the amount of material to be removed was entirely unpredictable, both as to quantity of cordwood and loose rock. This resulted in some train delays. It also necessitated the use of a continuous-arch barrel to support the roof and required a large amount of grouting to fill the voids between the rock.





TIMBER SETS are subsequently removed by men working from a wood scaffold mounted on a push car.

NEW RIBS are formed between existing timber sets by placing reinforcing and shotcreting.

ft, were provided. A total length of 4,486 ft of tunnel was left unlined. Untreated Douglas fir timber was used for the 1,206 ft of tunnel which was lined.

Timber lining applied

It soon became evident that more work was needed. To insure safe and uninterrupted operation, a lining would be required throughout the full lengths of both tunnels. This work was done in 1912 and 1913. But, again, untreated timber was used.

For untreated timber, this lining gave good service. But, from 1926 to 1938, various sections totaling 526 ft were reinforced by timber sets placed inside of the original lining where clearance was adequate. Also, lagging with cordwood packing was added along the walls as required to retain the loose rock.

In 1954 a detailed inspection of these tunnel linings was made. It revealed that the timber had deteriorated to the extent that imminent replacement was necessary. Pressure of loose rock on the tops and sides of many sections indicated that the timbers, weakened by age, would soon be unable to withstand the loads. The sections of lining in the best condition were estimated to have a remaining life of about 10 years. With this in mind, and because of the expenditures involved, it was decided to replace the lining by scheduling the work over the same extended period.

Because of the rock formation, the road's engineers knew that a new lining would have to be tailored to suit a variety of conditions. Several types of linings were considered. The one which seemed to be the most adaptable to the requirements was reinforced concrete.

Uses two work procedures

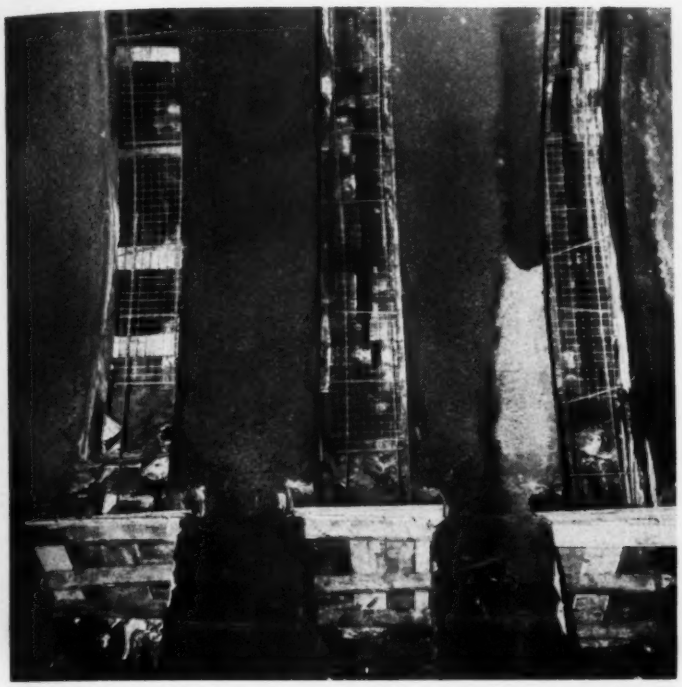
To date, two general lining-construction procedures are being used. One is for locations where the sidewalls and ceiling are relatively stable. The other is used through locations having loose and unstable rock. Both methods are described by the pictures and accompanying text.

Although the work is being done under traffic, few train delays occur. Line-ups are obtained at 7 am and at 1 pm each work day. Flagmen are stationed at a sufficient distance from each portal that they can see approaching trains approximately 10 min before their arrival at the tunnels. When a train is sighted, the foreman in the tunnel is notified. Because of previous planning, the scaffolds can be removed quickly and the tunnel cleared before the train arrives. Usually, the trains operate through the tunnels without having to come to a stop.

Except for brief periods of time, the alinement and length of the tunnels prevent the use of motor-powered equipment because of unsatisfactory ventilation. Considerable work, therefore, must be performed manually, which would be done by machines under ordinary conditions.

However, a number of pieces of equipment are available at the site. Power units consist of two 345-cfm compressors and three electric plants, two of the latter being units of 10-kva capacity and one being of 3-kva ca-

the rock in the walls and arches is loose or otherwise unstable, and . . .



WIRE MESH and reinforcing rods are placed in exposed areas, covering the packing, and approximately 4 in of shotcrete is added to seal the openings.

STRUTS, near the base and arch springing, complete the lining. The section is then pressure grouted to fill voids between the rock and lining.

pacity for lighting and powering small tools. Also available are three water pumps, two shotcreting machines, a grout pump, and a concrete mixer of 1-cu yd capacity. Four scaffolds, mounted on push cars, are used. One is for the shotcreting work, another is for installing the mesh and reinforcing steel, a third is for removing the timber lining and a fourth for stripping forms.

No winter work

The labor force averages from 29 to 32 men. They work from May through October. In the four years of work to date, they have completed 1,865 ft of tunnel lining. About 40,000 bags of cement already have gone into this work for concrete, shotcrete and pressure grouting.

The work is being done under contract by Creagham & Archibald, general contractors, Montreal, Que. M. S. Wakely, CPR's division engineer at Calgary, Alta., has direct supervision over the project and T. Podhorecki is the field superintendent for the contractor.

. . . This method is used where rock is stable

At these sections it is possible to remove the timber lining and apply a thin layer of shotcrete over the exposed rock of the roof. A simple system of small reinforced-arch ribs, at about 5 to 6-ft centers, is then installed by the shotcrete process. The intervening roof areas are reinforced with mesh and built up to a minimum thickness of 4 in by the same process. No attempt is made to maintain a uniform height of ceiling, although the ribs are kept above the road's clearance outline.

IN STABLE SECTIONS, reinforced-arch ribs are made at least 12 in deep and the intervening areas 4 in thick. Ribs have dowels, at about 2-ft centers, sunk into the rock.

Now just a big blow

How the Mopac fights dust st

This is how they are built

The first step in building a levee is to clear a path parallel to the track. This is usually done by a bulldozer. This same machine then begins to dig and push dirt into the path and builds up the levee to a height of about 6 ft. Then a dragline comes along and adds the final two feet and dresses down the side slopes. The growth of vegetation on the slopes of the levees is expected to protect them from wind and rain. It is reported that the first levee, built in the spring of 1957, has already sprouted a variety of western vegetation.

● In recent years, the Missouri Pacific has been plagued with a continuous series of dust storms in Kansas and Colorado which have played havoc with its right of way and operations.

High-velocity winds, sweeping down from the north, have lifted great volumes of Colorado topsoil so dense that vision is sometimes limited to a mere five feet. This dust has many strange qualities, all of them bad. It is so fine that it creeps into air-tight windows and in many cases, safes and vaults. It has caused the Missouri Pacific immeasurable harm. In addition to increased maintenance and cleaning of diesel equipment and rolling stock, the right of way has suffered considerable damage. It has required that the railroad maintain extra work gangs and equipment in these areas, thereby keeping them from more productive maintenance activities.

It is not unusual for railroad tracks and highways to be covered with three feet of dust after one of these storms. Last spring, after one of the

This is how they work

The principle of the dust levee is that it serves mainly as a deflector. As the dust hits the north side of the levee, it deflects in a vertical direction where it is then hit by the force of the wind and swirls in a tumultous pattern until it again joins with the main body of the storm. But by that time the dust has been carried far over and beyond the right of way. Some of the dust drops behind and in front of the levee and will be periodically cleared away by the maintenance forces.

ıst storms with dirt levees

severest storms, some sections had drifts as high as seven feet. There is great expense involved in clearing the tracks, but the delay in schedules and trains concerned the railroad the most.

It fouls signal circuits

One of the peculiar features of this dust is that it serves as a conductor of electricity. After the dust has settled in the tracks and is moistened by a heavy dew, rain or snow, it forms a circuit that causes unnecessary restrictive signals. Moreover, when packed between the rails and moistened, the dust solidifies into a cement-like composition. Maintenance crews must break up this composition with a special machinery. Naturally this process injures ties and reduces ballast efficiency.

As one means of solving the problem, it was decided to build dust levees on the windward side of the tracks in the most exposed areas. These dust levees or dikes are 8 ft in height, have 2-ft crowns and side slopes of one to one. The north toe of the levee is 175 ft from the center line of the track.

The levees will also serve as snow fences and safeguard against a perennial trouble-maker, the western tumbleweed. These weeds will either blow over the track with the dust or will drop behind or in front of the levee where they will eventually deteriorate or be burned.

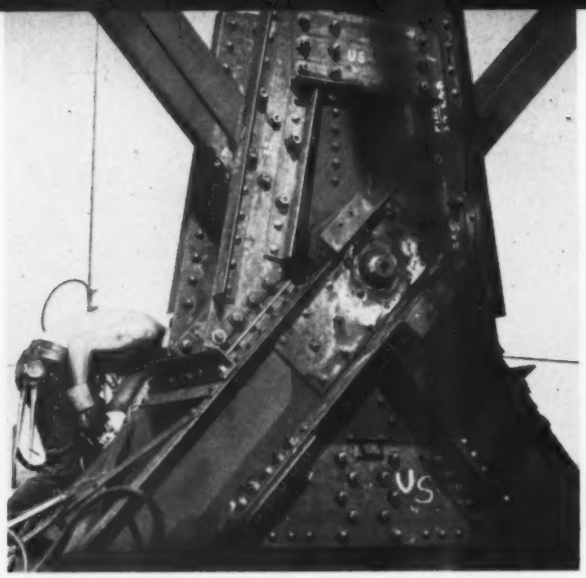
Has built seven miles

The railroad plans to build the levees to protect critical areas. So far about seven miles of levees have been built. The longest continuous stretch is about two miles and the shortest about 0.4 of a mile.

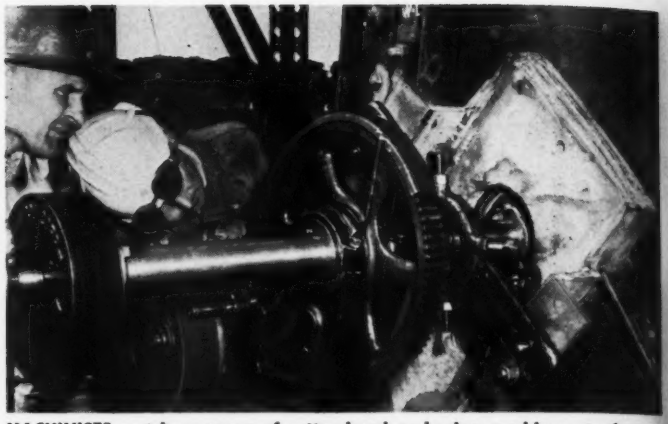
Building the levees is a comparatively easy job. The biggest problem was the acquisition of adjoining land. It was found necessary to have at least a 200 ft right of way in sections where the levees were erected. Most local landowners were quick to cooperate with the railroad. They either sold the Missouri Pacific the adjoining land or gave the road an easement. The spirit of cooperation was best displayed by one county which abandoned a two-mile road to the original property owner so that the Missouri Pacific could then buy it and build its levee.

In constructing these levees, the Missouri Pacific at no time interfered with or hampered any natural waterway or drainage. Bridges and culverts were left untouched as the levees are broken off at such points.

One of the advantages of the levees is that they will require a minimum of maintenance. Occasionally a track crew might burn the accumulating tumbleweeds or spread some of the drift that has fallen in front and behind the levee, but this will be required only infrequently.



MEMBERS coming together at pin connections are held in alinement by assembly of plates, angles and channels, called spidering.



MACHINISTS watch progress of cutter head as boring machine cuts through worn surface in truss members to provide smooth bearing for new pins.

Strengthened members and . . .

New pins revitalize old bridge

Eight pin-connected trusses of a bridge carrying both railroad and highway traffic across the Mississippi river are rehabilitated by strengthening and by replacing pins. By using falsework and a special clamping arrangement, the bridge members are held at proper alinement while worn pins are removed, larger holes bored and new pins inserted.

● Additional life through rehabilitation is being given to a 60-year-old bridge spanning the Mississippi river between Rock Island, Ill., and Davenport, Iowa. The eight-span structure, 1850 ft long, carries a 24-ft wide highway below the double-track main line of the Chicago, Rock Island & Pacific. The highlight of the repairs is the replacement of 30 worn pins in the pin-connected trusses.

The $1.7-million project also included certain general repairs needed to modernize the structure. All end posts and top chords required strengthening. The top lateral bracing had to be replaced. For the highway portion, all stringers and floorbeams had to be strengthened and the timber roadway and sidewalk replaced with steel grid and filled with concrete. All this work had to be carried out without interruption to the 30 or more daily train movements across the bridge as well as the river traffic through a swing span.

The density of rail traffic did not provide enough time between trains to permit the replacement of a pin. It was decided to support the pin-connected spans temporarily on falsework towers placed in the river to prevent them from collapsing when the worn pins were removed. Each tower consisted of four steel H-piles, about 32 ft long, framed together at the top with steel beams for jacking purposes. The piles were driven four inches into the rock bottom of the river, using rapid blows from a light double-acting hammer (McKiernan-Terry No. 7).

During driving, piles were guided at the water line by a framework of small angles resting on four pontoons, each 25 ft long by 6 ft wide. A crawler crane on a barge, 100 ft long by 30 ft wide, completed the water-borne equipment.

The spans were jacked from these towers to relieve the dead-load stresses in the truss members.

Spidering positions members

An unusual structural framework, called spidering, was erected around each joint where a pin was to be replaced. The spidering at pin hole M5, on the upstream truss of span 5, was typical. Pieces of channels, plates and angles forming the spidering were designed as a sectionalized gusset plate to hold all truss members in proper position during reboring operations. Six bolts were used to clamp each eyebar to the spidering and bolts were also used to connect the spidering to holes in the truss members. All temporary and permanent field connections required 80,000 high-strength bolts.

Spidering bolts were left loose during jacking and centering operations. During a slack period between train movements over the bridge, the span was jacked to the no-load position. Before removing any pins, positive proof of falsework stability was obtained by allowing trains to cross the span.

After stopping all traffic, a final centering adjustment was made by wedging and shimming the truss members at the pin and by raising and lowering the jacks. All spidering bolts were then tightened. The old pin was then removed by burning it into four or more pieces.

Holes are enlarged

At the joints where the pins were replaced, the old pins had grooves worn in them as much as one-half inch deep. Also, the pin holes had been enlarged. This called for larger

BRIDGE on which work was done has eight spans and carries a highway deck below the Rock Island's main line. Work consisted of general repairs in addition to replacement of 30 worn pins.

pins and the boring of enlarged holes on exact centers.

The pin holes were enlarged with a special boring machine. An electric motor, acting through a gear train, rotated a cutting bar, 2½ in in diameter by 6 ft long. A hand wheel on one end of the bar advanced the cutting tool along the hole. At both ends of the hole a cross-head plate, with an adjustable bearing for centering and holding the bar, was bolted to clip angles on a truss member.

Each pass of the cutter enlarged the hole diameter about one-fourth of an inch. The finishing cut provided a maximum clearance of 1/32 in over the new pin diameter. The new pins varied in diameter from 6½ to 10 in and replaced old 6-in to 9-in pins.

A slight change in the schedule of one train provided a six-hour work day for the actual reboring. Sometimes the reboring of a pin hole could not be finished in the time provided and had to be discontinued overnight to permit traffic over the bridge. When this happened, complete safety was insured for trains by inserting a temporary pin in the partially rebored hole.

Upon completion of the reboring the next day, a permanent pin was installed and the spidering was moved to the next similar joint. Two complete sets of spidering, matching each type of hole rebored, and three complete sets of boring-bar equipment for the whole bridge, were available and permitted the advance preparation of other holes, as well as insuring against lost time due to broken equipment.

Eyebars are adjusted

After the worn pin holes were rebored, the contractor began the tightening of all main truss eyebars. These had become so loose over the years as to be partially or totally inactive. It turned out that 13 per cent of the truss eyebars in the bridge were loose, causing overstresses in other truss members. Of these bars, 44 were readily adjusted by turning their turnbuckles.

The remaining nine loose eyebars, having no turnbuckles, were adjusted by the flame-shortening process. A one-foot length of each bar was heated to about 1600 deg F with oxyacetylene torches. Clamp plates, gripping the eyebar on both sides of the heated area, were then drawn together by tension rods to upset the heated area slightly. Upon cooling, the eyebar was bearing tightly on the pins at each end.

Adjusts span for expansion

The repair program included the remedy of an increasingly serious condition at the juncture of the swing span and the adjacent shore span. During hot weather it had become difficult to properly open and close the swing span because the shore span had moved and was binding at the railroad deck. Former temporary emergency measures had consisted of burning off a part of the railroad deck at one end of the swing span to provide better clearance.

This condition was traced to cap stones which had slipped on the abutment. First, the span had to be raised, using falsework erected earlier for reboring, to permit shifting the truss shoes on the abutment. At the same time the abutment masonry was strengthened by pressure grouting through new anchor-bolt holes. Horizontal force was then applied by jacks bearing against jacking posts inclined 45 deg to the horizontal under the span.

While span No. 1 was being moved, or when repairs required working near any of the transmission towers on top of the bridge, the contractor arranged with the power company to de-energize the six overhead 13,000-volt transmission lines. Voice signals, transmitted by walkie-talkie radio directly to the Iowa-Illinois Gas & Electric Company control room in Davenport, kept the workmen constantly informed as to when the lines were actually out of service.

The direct radio communication also made it possible for the power company to have work areas cleared at the bridge on short notice when emergency conditions elsewhere in their network required re-energizing the circuits. The same signaling system was used while transferring wires to two newly erected towers and removing one old tower at span No. 1.

The consulting firm of Modjeski & Masters, Harrisburg, Pa., whose founder, Ralph Modjeski, designed the bridge in 1895, inspected the structure and prepared design plans and specifications for the Corps of Engineers and the Rock Island railroad. Falsework and spidering schemes were designed and the shop and erection drawings were prepared by Plumb, Tuckett & Pikarsky, Gary, Ind. The general contractor, F. K. Ketler Co., Chicago, erected all steel fabricated except the highway deck. All highway reinforcing steel and Greulich grating was erected by Whiting Turner Co., Baltimore, Md.

Alloy electrode . .

Cuts cost of rail-end repairs

By using a special electrode, the Seaboard has eliminated the preheating and postheating of rails when building up rail ends. With four years of experience to back it up, the road reports that the welds are sound and show every evidence of durability under traffic. In addition, the Seaboard is saving about $30,000 per year.

● The Seaboard Air Line is now in its fifth year of doing something which many people said couldn't be done. Using the electric-arc method it is building up rail ends successfully without the necessity of preheating or postheating the rail.

How method was developed

The present welding method was evolved in 1953. The road's welding supervisor, J. C. Blackburn, was watching his welders use alloy electrodes for building up frogs and switches by the electric-arc process. He wondered why he couldn't use an alloy rod to build up rail ends without the need for preheating and postheating the rail. After some experimentation, he finally obtained a welding rod which proved satisfactory.

The electrode is a hard-facing rod called "Forgalloy C," made by the McKay Company, Pittsburgh, Pa. The rod has a tensile strength of 116,000 psi, a yield strength of 91,000 psi, and an elongation of 14 per cent in 2 in. As deposited, the weld metal has a hardness rating of 25 to 30 Rockwell C, but after the impact of traffic the hardness rises to 50 to 60 Rockwell C.

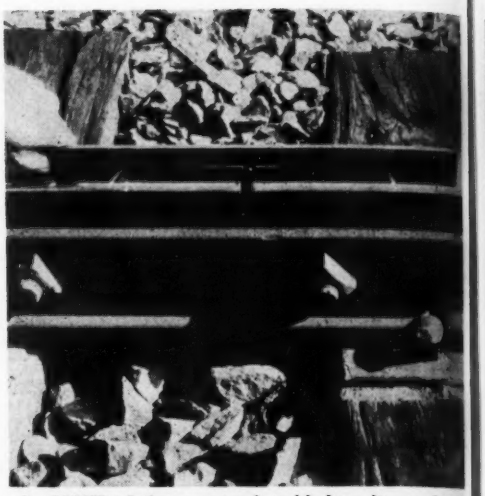
Uses low-carbon rod

The analysis of the Forgalloy C rod is 0.42 per cent carbon, 19.5 per cent chrome, 1.40 per cent molybdenum, 4.10 per cent manganese and 10 per cent nickel.

Up until two years ago, the road used the Forgalloy M rod, which had a carbon content of about 1.0 per cent. However, it was noted that the weld metal, in picking up carbon from the parent rail steel, became too brittle, resulting in some spalling. Since the Forgalloy C rod, with its lower carbon content, has been used there has been no trouble from embrittlement. A higher carbon content, the road states, would necessitate preheating and postheating.

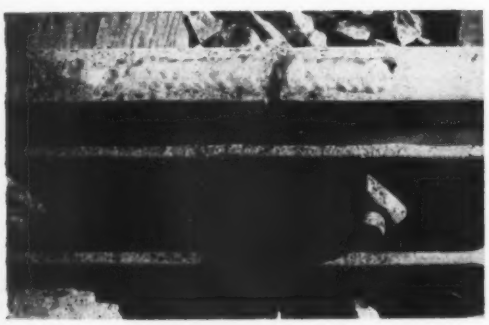
The weld metal is applied with a relatively high heat, using from 250 to 270 amp with ¼-in electrodes. This results in an arc penetration of about ⅛ in. The application of the weld metal is begun at the end of the rail. The electrode is then moved away from the end in a wide weave bead, then back to the rail end with a second pass. The welder then crosses the rail gap and follows the same welding procedure on the adjacent rail. No flatter is used.

The Seaboard builds up the ends of all relay rail soon after it has been



1 LIMITS of the proposed weld deposit are determined by a straight edge and keel marked on rail.

4 SURFACE PLANE is checked carefully by the grinding operators before they leave a joint.



How weld metal is applied

The application of the weld metal is begun at the end of the rail. The electrode is then moved away from the end in a wide weave bead, then back to the rail end with a second pass. The welder then crosses the rail gap and follows the same procedure on the adjacent rail. No flatter is used. The electrodes are ¼ in and are applied with 250 to 270 amps, giving a relatively high heat.

2 WELDER sets his grounding cable on the rail, strikes an arc, and proceeds to deposit the metal within the work limits.

3 RAIL HEAD is restored by two P-45 surface grinders, one on each rail. Each unit has two operators who spell each other.

5 RAIL ENDS are slotted by a P-11-S cross grinder. The operator of this machine can work on both rails and still keep up with the other units.

6 RESTORED to surface, this joint can be expected to last seven years before reworking becomes necessary.

laid and surfaced. It also regularly builds up many miles of its light rail in the track. In the latter case, the track is spot tamped before welding. Reformed angle bars, crowned 1/32 in, are applied in advance of the welding work by a 15-man gang. This force, made up from the sections, works only as needed to keep ahead of the welding work. It applies the bars at the rate of about 250 joints per day. This gang also does the spot tamping.

Only small crew needed

The welding gang is a 12-man gang comprised of 2 welders, 2 welder helpers, 5 grinding-machine operators and a cook. It is supervised by a foreman and a lead welder. This compares with 21 men formerly employed for the same work.

The present welding gang has two G-E 300-amp arc welders, each mounted on a small Schramm crawler-tractor carrier. The tractors are narrow (33 in out-to-out of tractor shoes) so they can travel along the ends of the ties and the ballast shoulder. Each one carries two 4-in by 6-in timbers to enable the tractors to cross the rails, as when working over a bridge. Each machine has from 75 to 80 ft of cable.

In addition to the arc welders, the outfit is equipped with two Railway Track-work P-45 surface grinders and a P-11-S cross grinder. Each surface grinder is assigned two operators so they can spell one another in this work.

This equipment can be moved quickly into the clear of trains. Except when working on a bridge, the welder helper has only to move the welding machine off the shoulder under its own power, and the other three units are lifted off the rails. The outfit also is equipped with a portable telephone so that a train line-up can be obtained every hour.

Lowers cost per joint

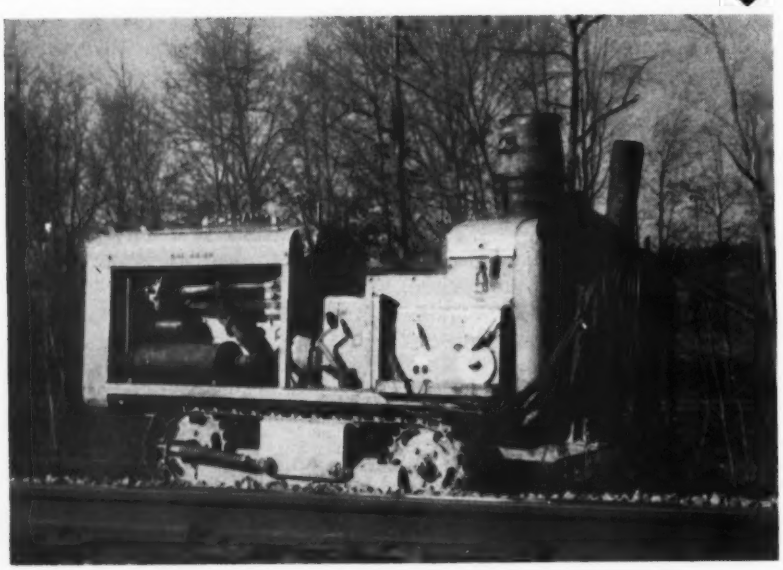
The welding gang is building up rail ends at an average rate 216 joints per day. The average includes the insulated joints encountered as well as the run-of-the-mill short welds and those 12 in and longer. Last year the road built up 51,475 joints on 190 track-miles at a cost of $1.20

Welders are mounted on crawler tractors . . .

TRACTOR-MOUNTED arc welders travel under their own power along the ends of the ties.

AT BRIDGES, they are moved to the inside of the rails. They carry timbers to cross the rails.

WELDER is a G-E 300-amp arc welder mounted on a Schramm crawler-tractor carrier.



per joint. In 1953, before the present method was adopted, 65,820 joints were welded at an average cost of $1.65 per joint.

Gang welds rail ends only

To maintain production, the gang is not stopped for doing any other welding work. Only the rail ends are built up, each welder depositing from 30 to 50 lb of metal each day. Engine burns are not handled by this force unless the burns occur in the joint bar area. Rails with split ends are not built up but are replaced ahead of the welding work.

The occasional horizontal splits and chipped ends found at the ends of the rails, however, are repaired. This is done by using a cleaver to knock out the separated portion and by reversing the polarity of the welder to remove enough metal to eliminate all cracks. The area is then rebuilt in the regular manner.

The Seaboard is well satisfied both with the performance of the gang and with the welds themselves. Many specimens of the built-up ends have been sawed off and etched for observing the grain structure. No sign of crystallization of the parent metal has been revealed.

Has more advantages

By using its present method, the road estimates that it is saving about $30,000 a year. Although the special electrode costs more than most rods, a big saving is made in labor. In addition, there is no interruption to train movements as these are allowed to run over the work at any time. Nor is there any rail droop from allowing the trains to pass. Also, no trouble is experienced with the Cadweld rail-head bonds, as the welding heat does not soak into the rail that far.

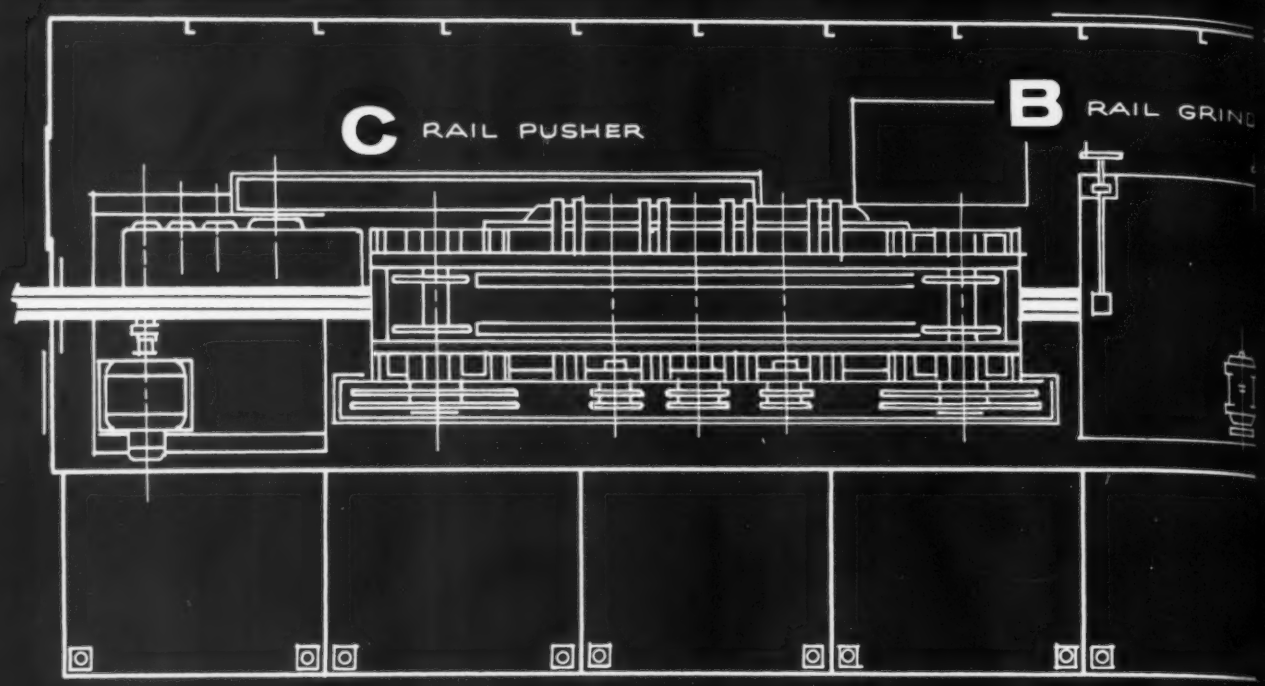
The present method of building up rail ends has been used long enough to prove to the Seaboard that the welds are sound and stand up under traffic. The road reports that there have been practically no weld failures. Recent inspections of the 1954 work show that the welds have more years of service life in them. The road confidently expects that the arc welds will last 7 to 8 years before rebuilding or slotting is again necessary.

Electric-flash-butt-weld . . . hairline weld with restricted heat transfer along rail body.

NCG® RAIL WELDING SYSTEM . . .

continuous-rail welding at its best

A completely new and unique advancement in continuous-rail welding is the NCG Continuous-Rail Welding System. NCG has acquired American manufacturing rights to the "System Schlatter" continuous-rail electric flash welder. Illustrated here is the mobile unit in operation. Please turn the page for details of the welding system.



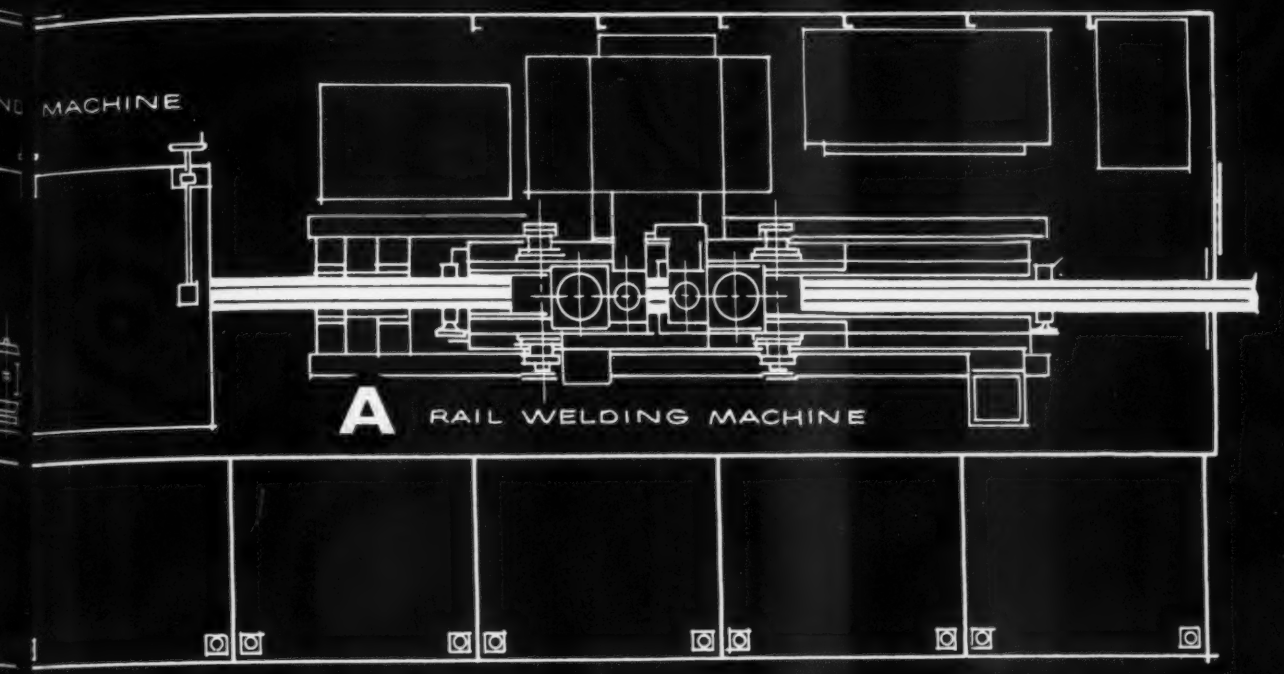
The NCG Continuous-Rail Welding System includes the NCG "System Schlatter" Rail Welding Machine, a Rail Grinding Machine and Rail Pusher. These and necessary auxiliary equipment are housed in a specially built railroad car. This is a 50-ton, 60 foot, all steel car, designed and built specifically to NCG continuous-rail welding requirements.

In order to provide additional working space and easy access to the car, one entire side is so constructed that it may be opened to form a continuous walkway with a roof overhead. The outer edge of the walkway is supported by adjustable stands. The roof section is supported by steel columns. Two large doors are provided in the end of the car near the welding machine for access and additional ventilation. A man door is provided in the other end and a standard 8 foot box car door is provided in the other side.

A **WELDING MACHINE.** The NCG "System Schlatter" Rail Welding Machine is essentially an electric resistance welding machine. However, its unique features make it the most advanced in the rail welding field. After the preheating cycle which brings the metal up to a plastic molten stage, the two rail ends are squeezed together for about ten seconds under about 30 tons pressure. A hammer-like blow of 50 tons is then applied forcing out of the weld joint all foreign matter, gases and surplus molten metal. Added to the advantage of the resulting perfect hairline weld, the diffusion of heat is minimized thereby eliminating costly and time-consuming annealing or normalizing. Immediately after the weld is completed a shear, which is part of the welding machine, removes most of the upset metal squeezed out of the weld joint.

B **RAIL GRINDING MACHINE.** This special NCG automatic grinding machine removes the remaining upset metal on the rail head and base. As the rail moves through the machine, grinding is accomplished by six belt grinding heads. Three finish the head of the rail while the other three finish the base sides and tieplate surface of the base. The grinder is quickly adjustable for all sizes of rail, and designed to achieve perfect blending of the rail surfaces.

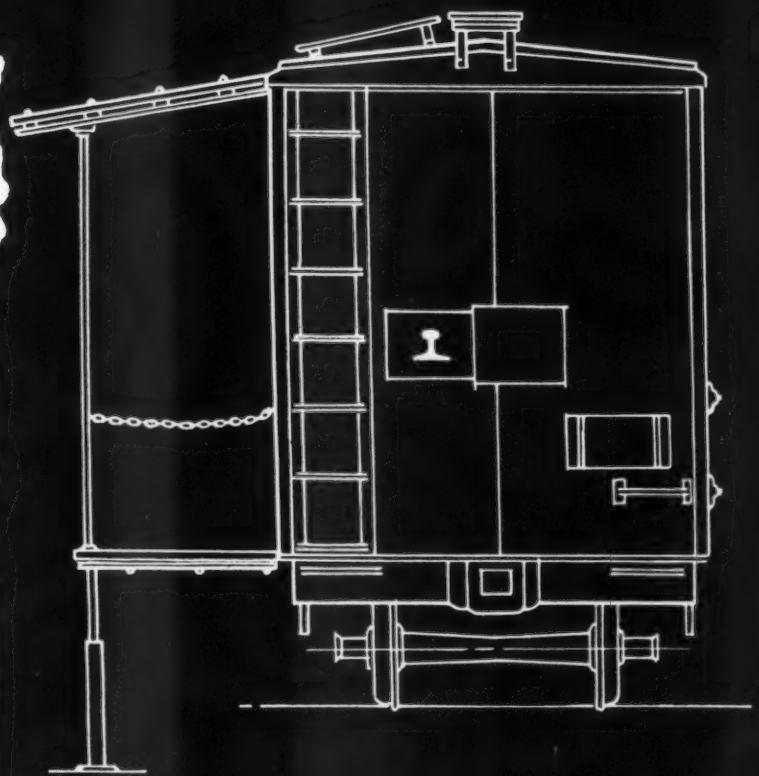
C **RAIL PUSHER.** The rail pusher, designed especially for NCG, provides the necessary power to move the rail from the welder through the rail grinder and on to the flat cars. The welding machine operator has complete control of the rail pusher and may move the rail in either a forward or reverse direction at variable speeds.



RAIL HANDLING EQUIPMENT. The rails are fed into the welding machine by an NCG automatic rail handling machine. This machine is mounted on a flat car and provides storage of rails for approximately one hour of welder operation without reloading. Rails are loaded on the bed of the rail handling machine by a small crane, and as rails are needed by the welder, individual rails are transferred from the rail bed to rollers which convey the rails through a fully automatic NCG electrode contact grinding machine into the welding machine. This automatic operation is controlled entirely by the welding machine operator.

POWER CAR. All the equipment required to generate electrical power for the operation of the NCG Continuous-Rail Welding System is housed in a specially built 50-ton, 50 foot, all steel railroad car. Included is a main diesel electric generating set to provide current for the welder and an auxiliary diesel electric generating set to supply power for the auxiliary equipment, a switchgear cabinet, storage cabinets, fuel tank and fuel handling equipment.

NCG Continuous-Rail Welding System can operate directly from power lines when available or from power car described above when necessary.



NATIONAL CYLINDER GAS COMPANY

CHICAGO, NCG ILLINOIS

CONTINUOUS RAIL WELDING SYSTEM

FOR SOUTHERN PACIFIC LITE RAILROAD (STD)

NCG® CONTINUOUS-RAIL WELDING SYSTEM IS AUTOMATIC...

- One man controls entire operation: positions and prepares rail for welding including electrode contact grinding—makes weld—removes flash—grinds and moves welded rail to flat cars.
- Releases men for required work elsewhere.

NCG® CONTINUOUS-RAIL WELDING SYSTEM MAKES POSSIBLE...

- Increased continuous-rail production. A completed weld every *four minutes* including removal of flash and grinding head and base.
- Higher quality welds for longer wear requiring less track maintenance. A perfect hairline weld with restricted heat transfer along rail eliminating annealing or normalizing.

NCG, a pioneer in welding, is proud to introduce this new and improved welding system to American Railroads. Continuous welded rail is proving to be an important advancement in modern railroading and the NCG Continuous-Rail Welding System makes it even more practical and economical to you. For further information, contact the Rail Welding department.

NCG®

NATIONAL CYLINDER GAS COMPANY

840 North Michigan Ave., Chicago 11, Illinois

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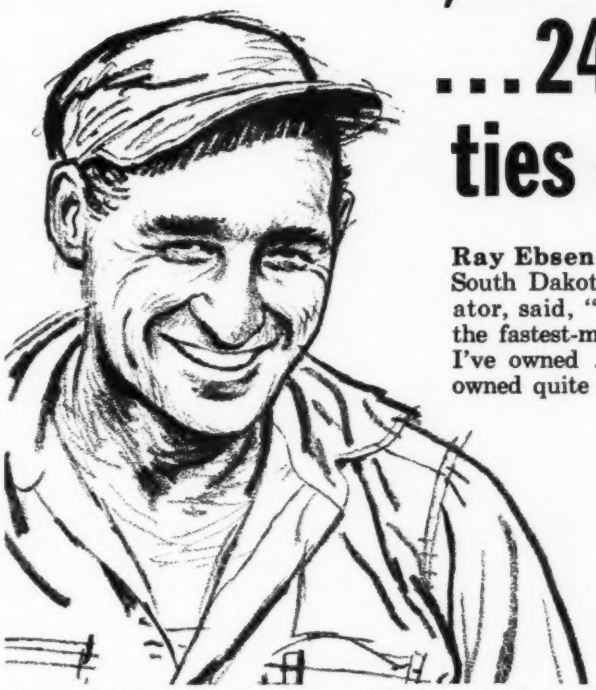
3,400 rails ...24,000 ties later

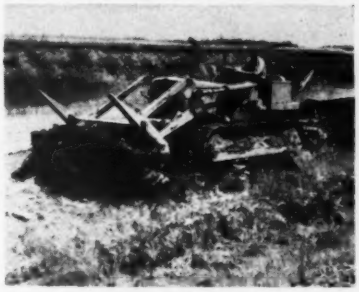


Ray Ebsen, Lake Andes, South Dakota, owner-operator, said, "this HD-6G is the fastest-moving machine I've owned . . . and I've owned quite a few."

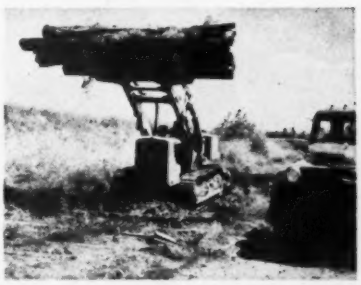
Using a homemade "rail hook" on his hydraulic ripper, Ebsen ripped 3,400 rails on a 9-mile railroad bed. The 33-ft rails were gathered, stacked and loaded onto trucks.

TRANSPORTATION DEPT., TRACTOR GROUP, MILWAUKEE 1, WISCONSIN

9 miles of ripping and loading



Breaking out and handling 24,000 wooden ties required real muscle power . . . and the HD-6G had it. After easing its forks under the ties, the tractor shovel powered forward ripping up 8 to 10 ties on each pass.



5,000-lb lifting capacity made lifting and carrying 6-ft ties easy. Ebsen said, "On this tough railroad job, my HD-6G used less than two gallons of fuel oil per hour . . . that's real economy."

With precise hydraulic control, ties were loaded onto trucks quickly and accurately.

Let your Allis-Chalmers railroad representative show you the HD-6G in action. See how this versatile unit reduces equipment investment . . . saves time and labor costs.

Look ahead . . . *move ahead* with ALLIS-CHALMERS

Products

Three new features give . . .

Improved service bodies

THREE improvements in the design of the Holan deluxe service truck bodies increase their strength and add a more modern appearance, according to the manufacturer. The new design features are a more rigid fender, a rub rail that resists dinging, and a "superflush" door handle for compartments.

Pressed into the high-tensile steel side panel, the new fender is said to be more rigid than conventional fender beads and to eliminate the need for stiffeners as well as providing greater rust resistance. Being in one piece instead of the usual two, the Holan fender eliminates overlapping construction.

The new rub rail is curved in such manner as to shed water away from the compartments and not into them.

The "superflush" handle is the successor to the former flush-type handle. The new one is said to be actually indented to give more strength and better appearance, and eliminates any projections on the body. *J. H. Holan Corporation, Dept. RTS, 4100 W. 150th Street, Cleveland 11, Ohio.*

Small parts cleaned by . . .

Rust solvent

AFTER three years of research, a new formula has been developed for a fast-acting penetrant and rust solvent. Called "Spray Nuts-Off," the solvent is designed "to loosen everything rusted and corroded," according to the manufacturer, and it will loosen stud bolts in aluminum heads and will free corroded tail pipes and mufflers. It is said to have no offensive odor and is safe to use on the finest mechanism. *Spray Products Corporation, Dept. RTS, P. O. Box 584, Camden 1, N. J.*

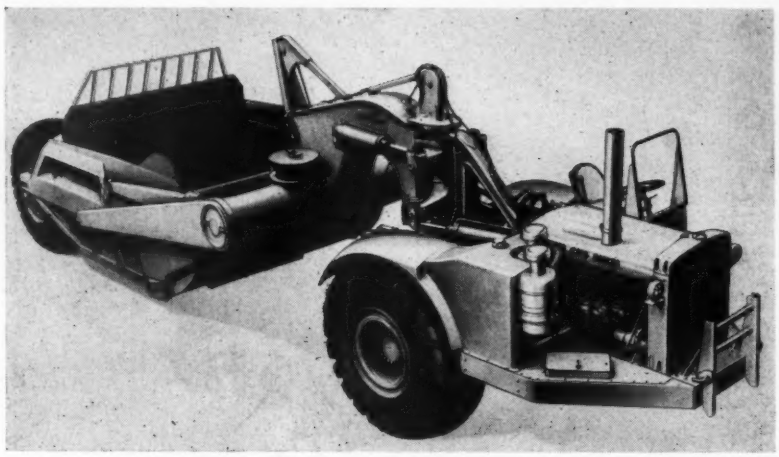
Flecks of color in . . .

Rubberlike floor runner

COLOR CHIP Rubberlike, a new thermoplastic floor covering product, has been announced by the manufacturer. Rubberlike is a floor-protecting runner for heavy-traffic aisles. The new colorings supplement the standard all-black Rubberlike Runner introduced several years ago.

The new Color Chip Rubberlike is flecked with two colors by means of plastic chips added during the manufacturing process. Colors offered are red and white flecks and green and white—both against a black background. The new generous sprinklings of color have the effect, it is said, of giving warmth and personality to an everyday product that had always been bought and sold on the basis of its usefulness in protecting floors and reducing floor noises.

Rubberlike Runner, as its name implies, has the appearance and the serviceability of a rubber runner, according to the manufacturer. Made with an asphalt base and a ribbed, non-skid surface, the material is said to have proved its ability to protect floors, at the same time withstanding the most strenuous abuse. The Cleveland Union Terminal, it is pointed out, has had the same Rubberlike Runners on its floors for fifteen years. *Bird & Son, Inc., Dept. RTS, East Walpole, Mass.*



Wheel tractors have . . .

Super-Turbo engines

A NEW SERIES of DW20 and DW21 wheel tractors, equipped with Super-Turbo engines which offer more power and greater operating efficiency, has been introduced.

The new wheel tractors have been designated the Cat DW21 (Series D) and DW20 (Series F), and their Super-Turbo engines have been designed to provide a maximum horsepower otuput of 320, accompanied by significantly improved torque rise characteristics. Operationally, these improvements combine to give these new machines the advantages of increased lugging ability and higher speeds, says the manufacturer.

The introduction of a new concept in diesel engine turbocharging is said to be of prime importance in the new engine. An improved air induction system has been incorporated which is intended to improve on the normally high fuel-combustion efficiency and power output of turbocharged engines.

Primarily, the air induction system provides accurate control of Turbocharger speed over its complete range and delivers more air to the engine. Such control of Turbocharger speed is said to allow the engine to operate at maximum efficiency regardless of its changing load requirements.

As an additional aid to peak engine efficiency, temperature of the air leaving the Turbocharger and entering the cylinder is lowered in going through an after-cooler, increasing the air density. This denser air, when packed into the cylinder, provides additional oxygen for the combustion of more fuel, and the generation of more horsepower.

Another operating characteristic claimed for the Super-Turbo engines is their ability to provide equal rimpull for the new DW21 and DW20 at 10 per cent higher travel speeds. Top speed of the DW21 is 22.6 mph, compared to 20.5 mph on the

Photo taken after 8 years of service at this heavy-duty location

HIGH SPEED CROSSINGS WITH LOW COST PROTECTION

Racor® reversible design needs only one casting and 13 rails to protect six crossings.

Ideal for high speed locations, this Racor design gives longer life and a smoother ride. And most of its parts are *interchangeable*.

Manganese steel inserts are of Racor integral base design and depth hardened—don't need the usual welding build-up after initial work hardening. Construction has the built-in flexibility needed for high speed traffic. It adds up to the perfect heavy-duty crossing for main line locations.

Only one spare casting is required to protect these six crossings, because all 24 manganese steel inserts are *interchangeable*. Only 13 spare rails are needed to replace any of the 144 rails used in the construction of the six crossings. In other words, the investment in spare parts for protection of these crossings has been reduced 75%. Furthermore, where there is heavy traffic in one direction, the inserts can be reversed to equalize the wear.

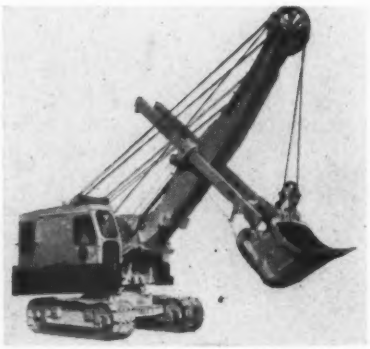
Many years of engineering experience have gone into this Racor-developed crossing and its patented features. Why not make use of this know-how in planning your next trackwork installation?

A-713

AMERICAN Brake Shoe COMPANY

RAILROAD PRODUCTS DIVISION
530 FIFTH AVENUE, NEW YORK 36, N. Y.
In Canada: Dominion Brake Shoe Company, Ltd.

previous series DW21. Top fifth-gear speed on the new Cat DW20 is 35.8 mph, an increase of 3.7 mph over the previous model. *Caterpillar Tractor Company, Dept. RTS, Peoria, Ill.*



Large capacity in . . .

Crawler excavator

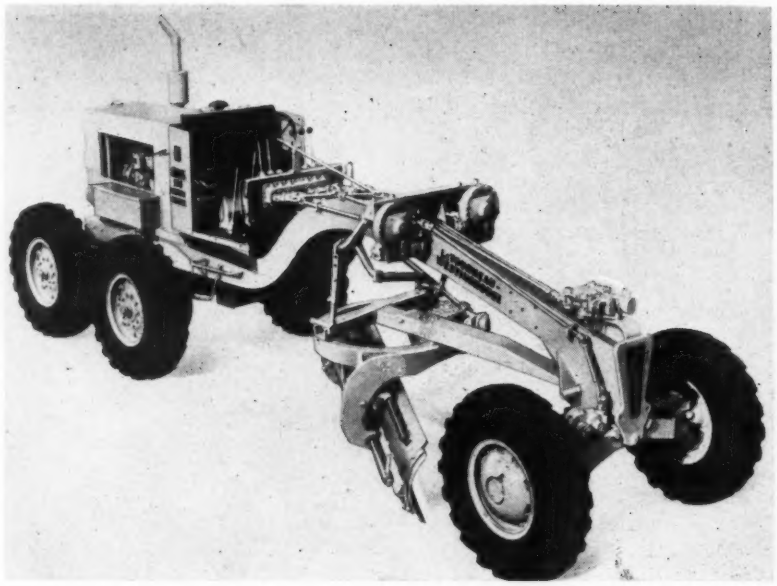
AN EXCAVATOR, designated Model 805, has recently been made available for use as a crane, a 2 to 3-cu yd dragline, up to a 3½-cu yd clamshell or a 2-cu yd shovel. It is equipped with friction-type steering brakes that are spring set and air power released, making it possible for the machine to turn within its own length when one crawler is completely locked.

The bucket on the 805 shovel is crowded into cut by a heavy roller chain. A high A-frame, power raised or lowered, is standard equipment on all cranes using 75-ft booms or longer. Six turntable and six hook rollers assure operating stability and evenly distribute the 805's weight under any digging or lifting strain, according to the manufacturer. Anti-friction bearings are used on the countershaft, horizontal swing and traction shaft, main drum shaft, vertical swing and traction spur bevel-gear shaft, revolving fairlead and retract-clutch drum. *Koehring Company, Dept. RTS, Milwaukee 16, Wis.*

Hy-Rail truck has . . .

Load-bearing guides

THE MODEL A30 Hy-Rail truck is now being fitted with load-bearing type guide wheels. The wheels are raised and lowered by hydraulic power and held in position by a separate mechanical lock. The wheel load is applied by means of an adjustable, rubber-cushion torque unit. A separate electric motor drives the hydraulic pump only when the control button is depressed. *Fairmont Railway Motors, Inc., Dept. RTS, Fairmont, Minn.*



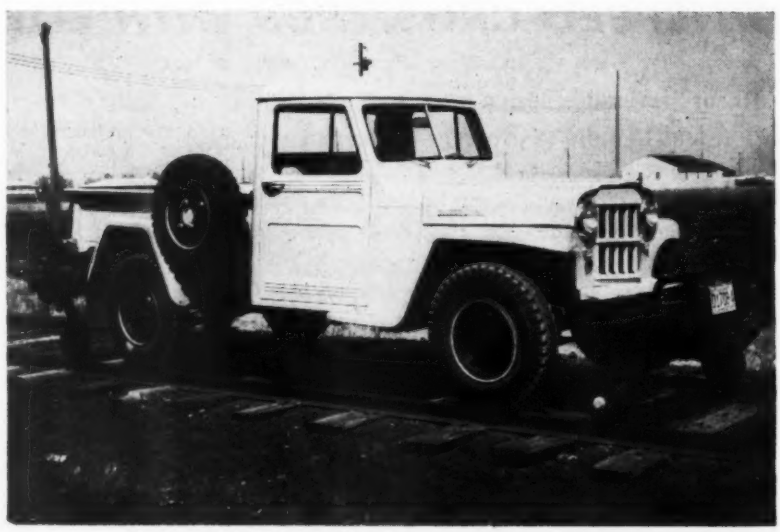
Tougher jobs done by . . .

Heavy motor grader

A TORQUE CONVERTER model of a motor grader, designated Power-Flow 550, has been made available. The torque converter is said to provide a flexibility of power which adapts this unit to the tougher grading jobs, such as banksloping, ditching, heavy grading and other work where there are light and heavy loads on the blade. The 550 grader has four speeds forward ranging from a creep to 26.4 mph, and an equal number of ranges up to 23.5 mph in reverse.

An exclusive feature of this machine, according to the manufacturer, is a mechanism which allows the operator to make changes in travel direction from forward to reverse without hand shifting. It is accomplished by a rocker-type pedal located where the clutch normally is found in a standard-transmission machine. Change in direction is immediate and the operator's hands are free for steering, manipulating the blade and other controls.

Another feature is a tail-shaft governor which automatically adjusts the engine speed. Using it, the operator can set the speed at which he wants to work with a hand throttle or foot accelerator, and forget the manual throttle. Engine options are either the Cummins NHC 4 BI or the GM 4-71, both rated at 135 hp. Other features are power steering, rubber engine mountings, final drive, foot accelerator, moldboard and accessory options. *LeTourneau-Westinghouse Company, Dept. RTS, Peoria, Ill.*



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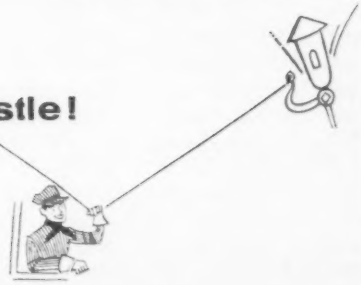
WEEDS GONE!

clean as a whistle!



Read how you can get longer-lasting weed control *at lower cost* with amazing UROX Weed Killer

It's a fact! Urox is so effective—so long-lasting—that single applications have given outstanding control *for as long as 12 months* on a wide range of annual and perennial grasses and broad-leafed weeds.

And results "carry over"! Light "booster" doses keep most areas weed-free from season to season. This means cumulative savings, because herbicidal action can be continued year after year with light follow-up treatments . . . or by applying standard doses at longer time intervals.

Yes, Urox is easy to use! Comes in free-flowing granular form. No water needed. Can be applied with inexpensive equipment or in shaker cans (for small clean-up jobs). And Urox is non-flammable when used as directed . . . has very low toxicity to animals.

All over the U. S., cost-conscious maintenance-of-way experts are using and praising Urox. Isn't it high time *you* investigated this sensational new weed killer?

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Company_____

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RT-4

RAILWAY TRACK and STRUCTURES

What's the answer?

To be answered in July

Do you have an answer to any of the questions listed below? If so, send it in. Payment—based upon substance and length—will be made for each published answer. If you'd prefer that your name be withheld, we'll gladly comply.

DEADLINE: May 31

1. What measures can be taken to reduce the number of designs of railroad crossings? Explain.

2. What is the best way to restore badly corroded floorbeams and stringers under traffic in a through-girder or through-truss railway bridge? Describe.

3. Where tie renewals and out-of-face surfacing are done on a cycle basis, is it also necessary to have spot-tamping gangs? Explain.

4. To what extent, and for what purposes, is it practicable to use secondhand lumber in railway buildings? What lumber reconditioning is first necessary?

5. Is it practicable to use long crossties in track where a number of soft spots exist? Or should other more-permanent corrective measures be taken? Explain.

Send answers to:

What's the Answer Editor
Railway Track & Structures
79 West Monroe Street
Chicago 3, Illinois

Do you have a question you'd like to have answered in these columns? If so, please send it in.

Sledding and tie renewals

To what extent is it practical and economical to make tie renewals in conjunction with under-track sledding and plowing operations? What, if any, are the disadvantages of this practice? Explain.

Effects large savings

By S. H. BARLOW
System Engineer of Track
Northern Pacific
St. Paul, Minn.

In establishing the first use of the Mannix plow and sled in the United States on a branch line of our Tacoma division in March 1955, we set up the extra gang with a sufficient number of men to knock down the ties to be removed just behind the sled while the track was still about 12 in above the subgrade. Also, we provided men with tie tongs to pull these ties clear before the track settled back onto the subgrade. Following these men, we have others who remove the tie plates from the old ties, inserting new ties, replace the tie plates, spike and respace the ties.

One of the greatest practical advantages of this method of tie renewals is the opportunity of seeing the entire tie while it is up on the sled or plow. This makes it possible to renew a tie that, while it looks to be sound from the top, is decayed in the portion normally hidden in the ballast.

Skeletonizing with the plow or sled averages two miles a day on our railroad, and tie renewals run at the rate of from 400 to 600 ties a mile. We renew 800 to 1200 ties a day at an average labor cost of less than $0.45 per tie. The savings may be determined by other railroads by applying this cost against the known costs of their tie renewals.

We have an established policy of making the current years' maintenance renewals, plus two years advance renewals, in ballast territories. We feel that we can justify an average loss of 1½ years of tie life due to the renewals being made so economically.

No disadvantages to this method of carrying out tie renewals are apparent from an economic standpoint.

The only disadvantage from a practical standpoint would be when the number of ties to be renewed would be increased to a point where the movement of the sled would be delayed to something less than the programmed two miles a day. This would upset to a slight degree the number of ballast cars to be unloaded that day and returned to the ballast plant. But, the greater labor savings, obtained from the increased number of tie renewals made, would more than offset this disadvantage.

Has no disadvantages

By M. G. COUNTER
Assistant Engineer of Track
Chicago, Burlington & Quincy
Galesburg, Ill.

I believe it has been the practice on nearly all railroads to make the necessary tie renewals in conjunction with any out-of-face surfacing program. This is done to effect economy in removing the old ties and inserting the new ones while the track is being raised, making it unnecessary to dig out the ties. Also, ties are renewed during the surfacing operation so that all ties, both those remaining in track and the new ties, will have equal bearing, and the track will not have to be disturbed again to renew any ties for several years afterwards.

The same reasons apply, in my opinion, in renewing the necessary ties in conjunction with operation of the under-track sled or plow.

The old ties should be marked prior to the operation of the sled or plow. They can readily be removed from the track before the track has settled to the ground behind the sled or plow. This is done by having a man walk on each side of the track,

One large railroad recently sprayed a bridge with Dearborn NO-OX-ID at a cost of only $15,000. It formerly cost $144,000 to paint this bridge by conventional methods. They will never paint another bridge! Are you interested in savings like this? Mail the coupon.

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equipped with a sledge, to knock down the old ties as soon as the rear of the sled or plow moves ahead of the tie to be removed. Other men, equipped with tie tongs and walking immediately behind the sledge men, pull the old tie from the track to the shoulder.

New ties should be distributed prior to the operation of the sled or plow. They can then be pulled into place in the track and spiked before the ballast is unloaded.

I do not know of any condition that would be more conductive to economy in making tie renewals than that directly behind operation of the under-track sled or plow. There is no ballast above the bottom of the tie to interfere with insertion of the new ties, and the old ties are removed while the track is in the air behind the sled or plow.

I cannot imagine any disadvantages in making tie renewals in conjunction with the operation of the under-track sled or plow.

Enormous savings

By C. C. THOMPSON
Asst. Supt. Maint. & Engr'g.
Great Northern
Minot, N.D.

The savings in dollars and cents by making tie renewals during under-track sledding or cribbing operations is enormous.

While the track is in suspension directly behind the sled, the scrap ties are knocked loose from the rails by a laborer on each side of the track with a sledge. Two other laborers with tie tongs pull the scrap ties out from under the rails. Renewal ties are placed and the remaining ties are spaced further behind in the working operations.

By renewing ties in this manner all digging out and digging in of new ties is eliminated, as the track is skeletonized to the bottom of the ties by the sled. A further saving is realized in that it is not necessary to use jacks, tie cutters, or other tie-renewal machines.

In sledding operation it is often possible to exceed one mile a day renewing 500 to 750 ties. After the old ties are spaced and the new ties are spiked, the track is ready for unloading ballast in the cribs for the desired lift.

Labor savings high

By B. S. BUSKOVICK
Roadmaster
Chicago, Rock Island & Pacific
Rock Island, Ill.

We have used sledding operations in the past only on track where the ballast will be renewed with another type. We find it very practical and economical to make tie renewals at the time the sled is moving underneath the track. The ties are knocked loose from the suspended rails and are removed immediately before the track settles down onto the roadbed.

In removing ties under this type of operation there is no necessity for pulling the spikes with a clawbar. You can readily see that there is a labor saving there. In comparing the cost of making renewals by this method with that of digging the ties in by hand, we make a saving of 84 per cent in labor costs. When ties are renewed when the track is raised out of face with power jacks, the method of renewing ties during the sledding operation will still save 50 per cent of labor costs. Our renewals average 475 ties per mile.

We do not find that there are any disadvantages to the practice of renewing ties while sledding.

Single-pipe culvert vs. multiple

What factors determine whether a culvert should consist of a single pipe of large cross section or two or more smaller pipes? Explain.

No general rule

By H. M. TREMAINE
District Engineer (Ret.)
Northern Pacific
Spokane, Wash.

No general rule may be originated. The type of culvert, or culverts, to be employed depends on a detailed analysis of conditions.

The cross section of the gulch or channels to be served and the drainage area with its degrees of slopes must be considered.

The kind of material in the overlying roadbed must be known to determine whether it is of a quality which will withstand, without protective works, a head of water equal at least to the diameter of the opening.

Due consideration must also be given as to whether or not the waters carry silt or debris at low water flow or at flood stage. Would the opening require cleaning?

Outlet channels must be taken into account because the effect of the discharge on the areas on or off the right of way must be considered for any flow.

Some culverts serve areas where the only water of any consequence occurs when either rain falls on frozen ground or on snow overlying a frozen surface. Frozen conditions do not permit the ground to absorb water and frequently cause a sudden rush of water or a flood. In locales where such conditions exist, serious study must be given to past experiences.

Comparative costs must be considered without detraction of the purpose to be served.

Lists six factors

By E. L. ANDERSON
Asst. to V.P.-Operations (ret.)
S.L.-S.F.
St. Louis, Mo.

Consideration in design should be given to the following:

(1) The distance from the bottom of tie to the flow line.

(2) The topography above the pipe.

(3) The openings upstream, under either a highway or another railway, which might be affected.

(4) The elevation of the drainage divides on the upstream side, both directions from the pipe, compared with the flow line.

(5) The passage of drift and debris.

(6) The total cost of the job, in-

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Acquirement plans to suit your needs.

JACKSON VIBRATORS, INC.
LUDINGTON, MICHIGAN

What's the answer? (cont'd)

cluding any temporary track supports.

The first consideration above determines the possibility of a single-pipe opening after applying the required and recommended cover for different types of pipe. Should that be sufficient, then the considerations enumerated below will govern.

The nature of the terrain above the pipe opening should be studied to determine if any overflow will result should a single pipe run full. That is, can the water be backed up to give a full head to the pipe without incurring drainage complaints? This is particularly important in dense or highly developed locations.

Where a highway or another line of railway has a drainage opening above the pipe, care should be exercised to determine if a single pipe, utilizing its waterway opening 100 per cent, will hold back water to the detriment of the adjacent opening.

The elevation of the drainage divides with respect to the flow line of the pipe should be studied carefully. Full utilization of the pipe opening should be available without forcing water over the divide into another opening and overtaxing it.

So far the considerations have been based on the idea of using a single pipe where field investigations, as outlined above, have indicated that it is practicable. This is because a single pipe usually is more economical. It is assumed that multiple pipe lines would be used where headroom is lacking or where waterway areas must be maintained at a low level. In the use of multiple pipes, the matter of passage of debris and drift, as well as the clogging up of the pipes, should not be overlooked.

After the best selection has been made with respect to the foregoing considerations, cost then becomes a consideration. The actual cost of the pipe material, expenditure for placing it, including any temporary track supports, and the effect on train operation must be studied. Such study may indicate that the multiple-pipe opening is desirable because of economy, although a single pipe may fit all of the necessary field requirements.

TIE PLATE LOCK SPIKES . . . GAGE LOCK SPIKES

Hold Gage—Extend Tie Life

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Tie Plate Lock Spike

Gage Lock Spikes in Track

Gage Lock Spike

TIE PLATE LOCK SPIKES hold tie plates firmly in place on cross-ties and bridge timbers. They are quickly and easily driven or removed with standard track tools. Driven to refusal, the spread shank is compressed by the walls of the hole. Plates are held against movement under spring pressure. Play between spike and hole is eliminated—gage is held and plate cutting is overcome.

The GAGE LOCK SPIKE is a rail spike, as well as a plate fastening, for use on tangent track and light curves where lateral thrust can be overcome with only two spikes at each plate rather than four cut spikes. It possesses the same features and advantages as the Tie Plate Lock Spike. The Gage spike is offset at the tie plate surface to avoid thrust and wear from the edge of the rail base. The use of Gage spikes saves up to 13,000 spikes per mile and potential damage to the tie from spiking and splitting is drastically reduced.

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Prefers single pipe

By W. L. McDaniel
Vice-President
Massey Concrete Products Division
American Marietta Company
Chicago, Illinois

In general, it is always preferable to use a single pipe of large cross section rather than two or more smaller pipes. The principal reason for using two or more pipes is that low head room prevents the use of a single pipe. The amount of cover over a pipe varies with the amount of load that has to be carried. For any given condition, therefore, it is sometimes preferable to use two or more culverts in order to properly carry the load at any given depth. One other factor that could influence this is the capacity of the available handling equipment. It is possible that a crane of sufficient capacity would not be available for a large pipe but would have sufficient capacity for smaller pipes.

New Santa Fe culvert is a combination of Armco Liner Plate and MULTI-PLATE

Beveled Armco Structure Installed Under Santa Fe Tracks Without Traffic Delays

A new drainage opening had to be made under the Santa Fe main line near Lang, Kansas. Requirements for the structure included beveled ends and complete installation without interrupting rail service.

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This job is typical of the way many railroads solve difficult drainage problems with Armco Corrugated Metal Structures. For more details on the Santa Fe job or complete data on Armco Liner Plate or MULTI-PLATE, just fill out and mail the coupon. Armco Drainage & Metal Products, Inc., 4008 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

Armco Liner Plates assure safety for both workmen and traffic during tunneling operations.

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What's the answer? (cont'd)

Vegetation is factor

By L. P. DREW
Assistant Chief Engineer
Union Pacific
Omaha, Neb.

The principal factors to be considered in deciding whether a single or multiple opening should be provided are:

(1) The character and type of drainage served. If the area is a flat country, with only sparse or no vegetation and flows at low velocity, multiple openings will usually be satisfactory.

(2) If the drainage area served is wooded or covered with heavy vegetation so that there is the prospect of drift being carried in streams at high velocity, a large single opening is always preferable in order that drift will be passed without clogging the opening as would occur with multiple openings.

(3) If the opening serves primarily as an equalizer or overflow channel through areas subjected to flooding, with water at low velocities, multiple openings are entirely satisfactory and often preferable.

Economy is important

By C. F. INTELKOFER
Assistant Bridge Engineer
Great Northern
Seattle, Wash.

Economy is one of the most important factors which will determine whether a culvert should consist of a single pipe or multiple pipes. In general, a single large pipe will be the most economical. However, the area of waterway required may be so great that it will be cheaper to provide two or more openings rather than a single pipe.

Another factor which should be considered is the shape of the channel in which the culvert is to be placed. A single pipe is suited to a narrower water-course while a series of pipes is best for a wide shallow channel. Multiple pipes keep the waterway area low and reduce the tendency of headwaters to accumulate upstream from the culvert. This accumulation of water early in a runoff can result in higher velocities in a single pipe, thus increasing the possibility of scour at the outlet.

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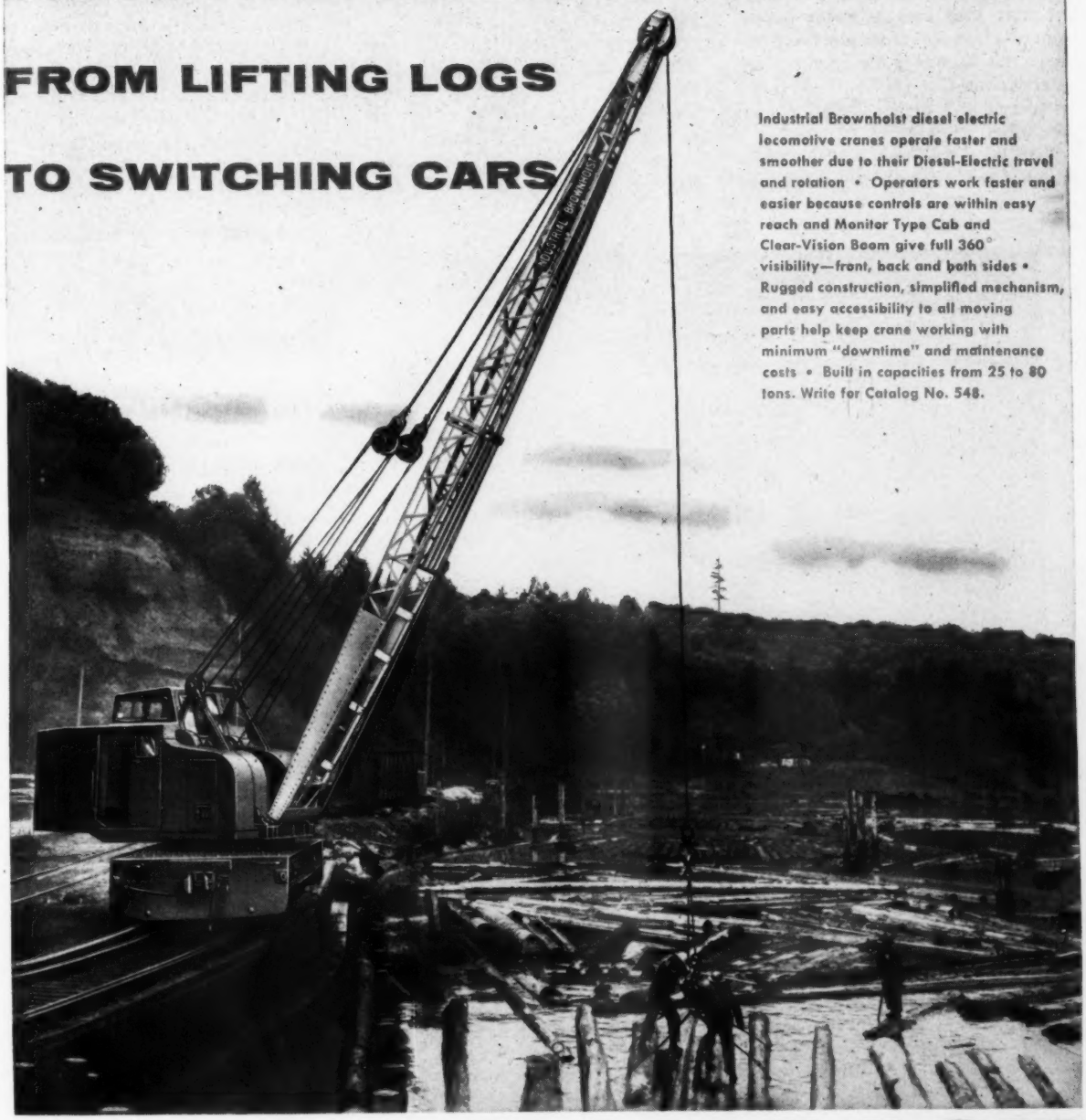

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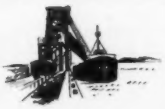
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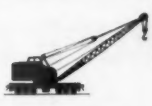
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What's the answer? (cont'd)

In some areas drift, in the form of ice, weeds or brush, is a factor that should not be overlooked. A single opening may clog up with debris, whereas two or more openings reduce this hazard if the openings are placed some distance apart and if one is placed at a higher elevation than the other.

An important factor in the selection of the number of pipes is the headroom or distance from streambed to top of rail or top of roadway. In many instances the headroom will not be sufficient to permit the installation of a single pipe and provide the minimum cover. So two or more pipes may have to be used.

Other factors which may determine whether the culvert should consist of a single or multiple opening are the methods and materials to be used in making the installation and the equipment available for carrying out the work. If the culvert is to be tunneled through an embankment, a single opening would be preferred because it would require less labor than an equivalent opening using multiple pipes. The excavation of embankment and handling of the pipe will probably be done by a machine. The capacity of the machine will determine the size and weight of units that can be handled and may warrant the use of two or more smaller pipes rather than a single large pipe.

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Servicing drainage pumps

Should drainage (sump) pumps be serviced at regular intervals? If so, how often and to what extent? Explain.

Specific instructions

By R. SHOEMAKER
Manager Tool Division
Ingersoll-Rand
Chicago, Ill.

We assume that this refers to our size 250 air-motor powered sump-pump. Owing to the severe conditions under which a pump of this type operates, proper lubrication is of utmost importance.

Lubrication:

(1) After each four hours of operation replenish the oil in the oil chamber in the Bach head. A good quality of SAE 20 or 20 W motor oil is recommended. If an air-line lubricator is used, it should be refilled when necessary.

(2) Weekly, or as experience dictates, unscrew the caps from the three grease fittings and, with suitable grease gun, apply two or three strokes to the two fittings nearest the air inlet. The remaining fitting is the means of filling the chamber of the built-in grease lubricator. Insert grease until the chamber is filled; a full chamber is indicated by grease emerging from the grease level valve. All caps must be replaced. Only a good quality cold-water pump grease should be used.

General servicing instructions:

Effective brush control with "Ammate" in Mississippi. Note cotton and other crops adjoining right-of-way have not been harmed by "Ammate" application. "Ammate" is non-volatile . . . can be used on rights-of-way even where they adjoin cropland planted to sensitive crops like cotton, tobacco, grapes, tomatoes, soybeans and peanuts.

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Railroads throughout the country are turning the unique advantages of Du Pont "Ammate" Weed and Brush Killer into maintenance savings. "Ammate" assures long-term brush control, which means lower maintenance costs. When the original spray job is thoroughly done, only subsequent occasional spot sprays are needed to keep brush under control for years.

"Ammate" kills more kinds of brush than any other brush killer. "Ammate" is non-volatile, and because of this feature it can be used on rights-of-way even where they adjoin cropland planted to sensitive crops.

Cut your maintenance costs; rely on Du Pont "Ammate" for long-term brush control.

• *Du Pont "Ammate" Weed and Brush Killer is available in solution (tank-car quantities) or crystalline forms.*

For economical, long-lasting weed control, use Du Pont TELVAR®

MONURON AND DIURON

weed killers

Du Pont "Telvar" weed killers, used separately or in combination with sodium chlorate or weed oil, provide the base for efficient, economical weed-control programs. Continuing tests conducted by the Association of American Railroads indicate that such herbicidal combinations offer long-term residual control.

"Telvar" weed killers come as wettable powders, are non-volatile, non-flammable, non-corrosive and low in toxicity to humans and livestock. One application of "Telvar" controls weeds for a season or longer . . . saves you handling and storage space . . . cuts annual maintenance costs. Add effectiveness and economy to your weed-control program with Du Pont "Telvar" weed killers.

Du Pont Technical Service representatives are available to discuss your weed- and brush-control problems. Contact the District Office nearest you. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Wilmington 98, Delaware.

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WEED and BRUSH KILLERS

What's the answer? (cont'd)

(1) At regular intervals, semi-monthly or monthly, as experience dictates, clean air strainer by removing air-strainer plug and turn on air momentarily. This removes accumulated dirt from air-strainer screen.

(2) Once every two to four months, depending upon cleanliness of air supply, remove air-strainer screen from the pump and wash thoroughly in kerosene or other solvent.

(3) After each 600 to 800 hr of operation, the air motor should be dis-assembled, cleaned, and the vanes inspected for wear. Vanes should be replaced when worn ⅛ in or more.

(4) After each 2000 hr of operation, the complete pumps should be dis-assembled, cleaned, and inspected. Any worn or mutilated parts should be replaced. Impeller clearance should be re-adjusted to .010 in for maximum efficiency.

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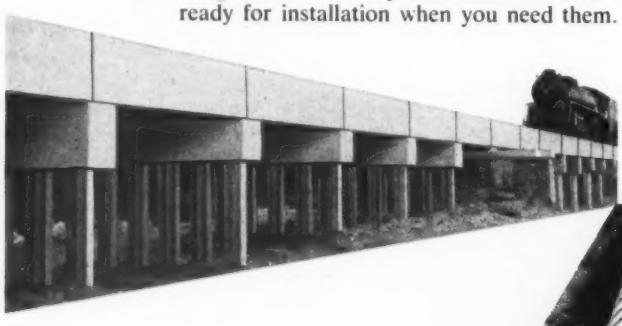

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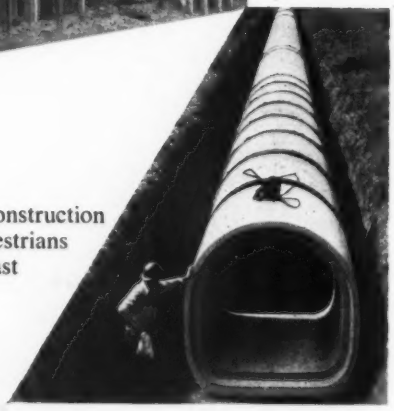

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Once a week

By L. C. Hinsch
Chief Carpenter
Milwaukee Road
Aberdeen, S. D.

Drainage pumps should be serviced at regular intervals. The interval for making these service inspections will depend on the importance of the facility to be protected and the climatic conditions. In territories where the temperatures will be below freezing and the facility is very important, such as a track scale, these inspections should be made at least once a week at a regular time. Float switches should be tested to make sure that contacts are not corroded, and the sump should be cleaned to assure that no foreign material can get into the impeller. Greasing and oiling should be done in accordance with the manufacturers' instructions and should be done at the time of one of the regular service inspections.

Standby power units

In what types of railway buildings is it desirable to provide an emergency power plant to furnish electricity in the event of a commercial power failure? What factors enter into the selection of such a plant? Explain.

Essential to have

By A. L. Becker
Engineer of Structures
Missouri Pacific
St. Louis, Mo.

This problem has been brought to my attention on various occasions. Having experienced vital power failures, I am convinced that there are certain specific locations where it is essential that emergency or standby power should be furnished.

In my opinion radio base stations and CTC installations, located in isolated areas where power supply is not considered dependable and where a power failure would interrupt the operation of trains, should have emergency power available.

USS designed turnout for high speed, heavy freight, CTC installation

THIS turnout was designed for a location that sees lots of heavy, 40 miles-per-hour freight, 24 hours a day. The best was required. United States Steel designed it.

The 39-foot rigid split switch has Samson-type points that are doubly reinforced, insulated, heat-treated and have special plating. Special plating was also applied to the #20 (type A.R.E.A. 625) railbound manganese steel frog. USS TAYLOR* adjustable braces were used to cut installation and maintenance costs.

The painstaking care that goes into design also goes into the manufacture of USS Trackwork. The smallest details—the true marks of quality—get constant attention so that you will enjoy the ultimate in long-lasting service. It pays to specify USS Quality Trackwork.

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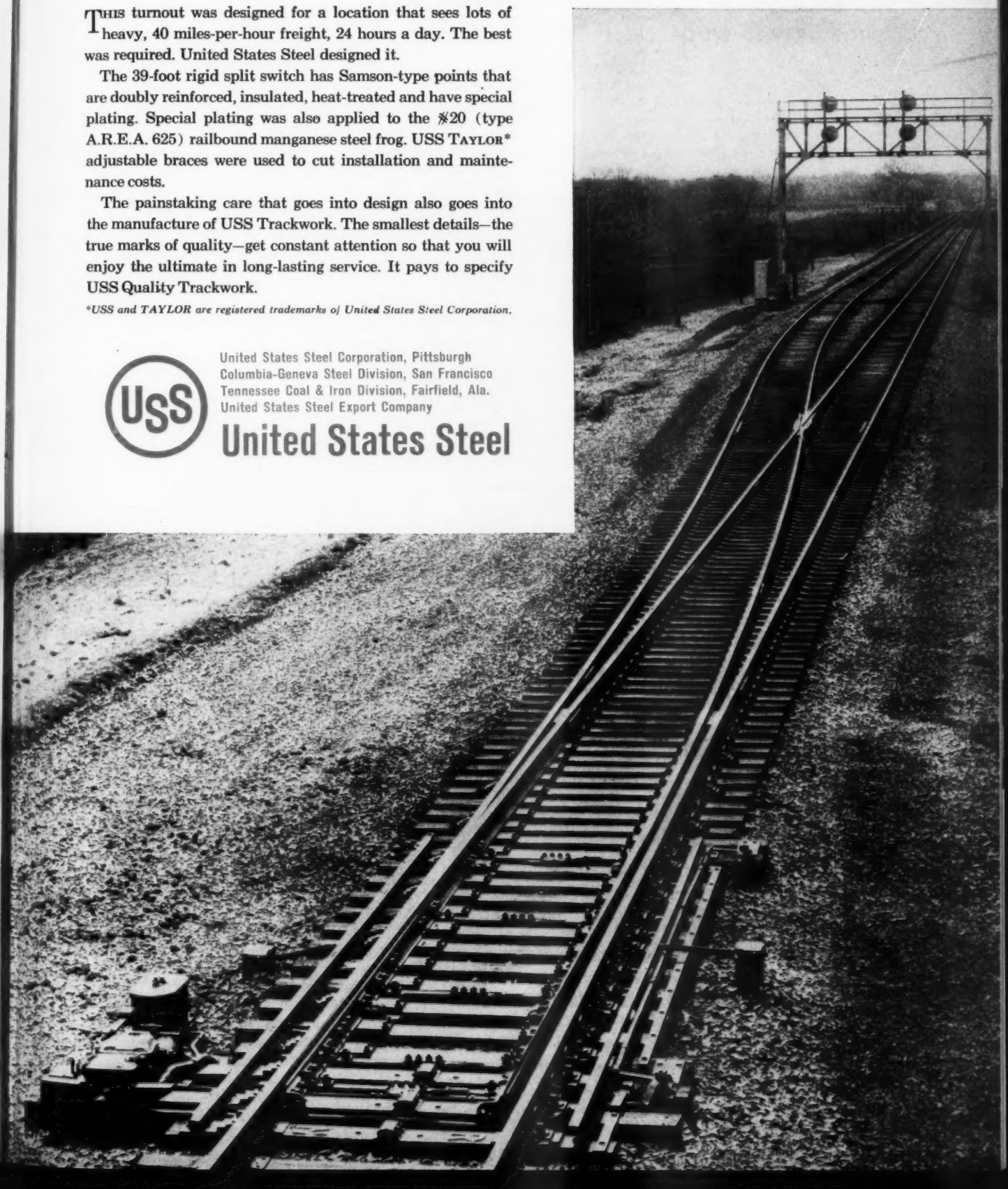

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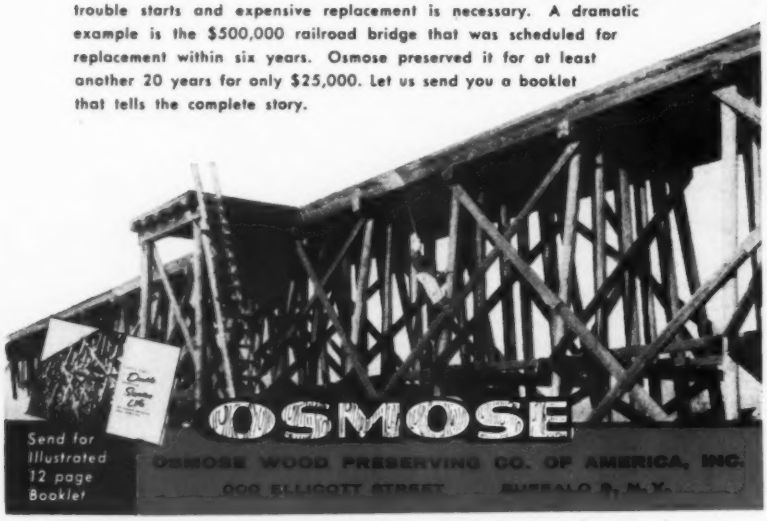

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What's the answer? (cont'd)

Underpass drainage systems, where underground seepage is a constant hazard, should have standby power service to insure the operation of the pumps at all times.

Univac computer installations and IBM machine rooms should have power protection. A failure could cause considerable duplication of work.

There are some instances where a shut down of diesel-repair facilities would cause costly delays. These locations also should have an independent service of power supply available should the commercial supply be interrupted.

When a standby power plant is installed, it should be periodically and systematically tested to assure dependable operation when needed.

They are desirable

By W. S. Ray
Engineer of B & B
Central of Georgia
Savannah, Ga.

Emergency power plants are desirable in company hospitals, especially in operating and emergency rooms. They also are desirable in yard offices and yardmaster towers for use by the communication and speaker systems and for the operation of IBM machines used for making train consists. They are especially needed in train dispatchers' offices for continuous operation of communication equipment, necessary for transmitting and receiving train orders, and for the operation of CTC equipment.

Factors which enter into the selection of such a plant are: The amount of electric power absolutely necessary for the proper operation of equipment, lights, etc., which is predetermined by a study or survey; the kind of power, such as alternating current, direct current, phase, voltage, cycle, etc.; the availability and cost of the type of fuel needed to run the plant; and the frequency of commercial power failures. In some cases, a standby battery system may be sufficient. In other cases, it may be necessary to have a diesel or gasoline-driven generator.

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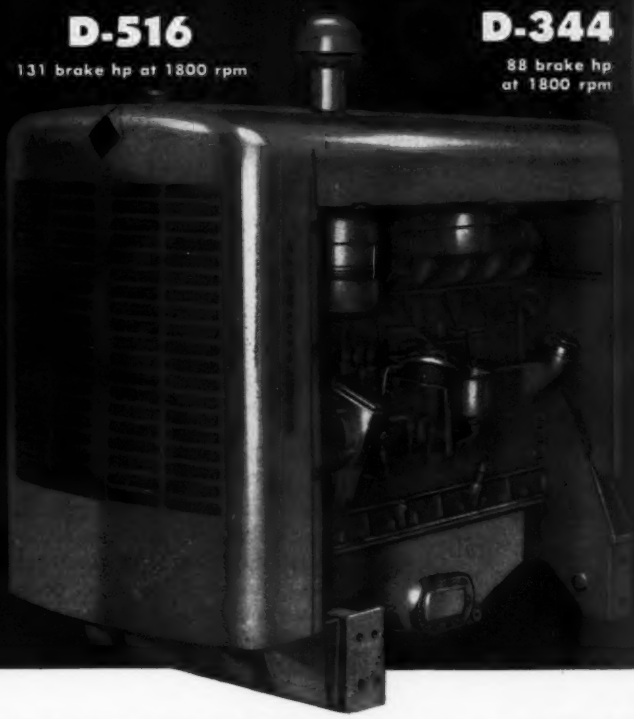

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Maximum bare engine horsepower (at 1800 rpm)	88	131
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Basically the conversion kit consists of manually retractable cast steel guide wheels on automotive hubs. The frames and mounting brackets are variable to match individual vehicle types. In road position the assembly retracts under the vehicle and does not interfere with normal operation in any way. The Rail-Road kit will fit most cars and small trucks having tread width comparable to rail gauge. We would be pleased to tell you more. For complete details write . . .

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vegetation control
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What's the answer? (cont'd)

No. 2 and shorts for welded rail

To what extent can "X-Rayls" (browns), short rails (greens), and No. 2 rails (whites) be utilized in the production of continuous-welded strings of rail? What changes, if any, must be made in the welding set-up to accommodate any or all of these rail classifications? Explain.

Worth while to explore

By C. P. MARTINI
Roadmaster
Soo Line
Stevens Point, Wis.

There have been numerous successful welded-rail jobs using secondhand rail. The differences in size, shape and quality of secondhand rail are much greater than any differences found between No. 1, No. 2 and X-Rayls in new rail. So, it follows that it is possible to get satisfactory welds using these rails.

However, on some roads the use No. 2 and X-Rayls is not permitted in main tracks. The reasons for barring their use would be the same whether they are welded in continuous strings or used in conventional track. If the use of these rails is not barred in conventional track, there is no reason why they could not be used in welded rail.

Short rails present an entirely different problem. The quality of the No. 1 short rails (green end) is the same as the No. 1 39-ft rails. These short rails come from the steel mills in any length from 25 to 38 ft, but they make up a very small percentage of the total number of rails purchased. The problem is getting a welding assembly line that will accommodate various length rails.

Most welding assembly lines are laid out so the welding, cropping of the upset metal, normalizing, grinding and testing are done at the same time at stations from 2 to 10 rail lengths from where the weld is being made. If the welding line is to be made to accommodate any length rail from 25 to 38 ft long, a lot of flexibility must be built into the setup.

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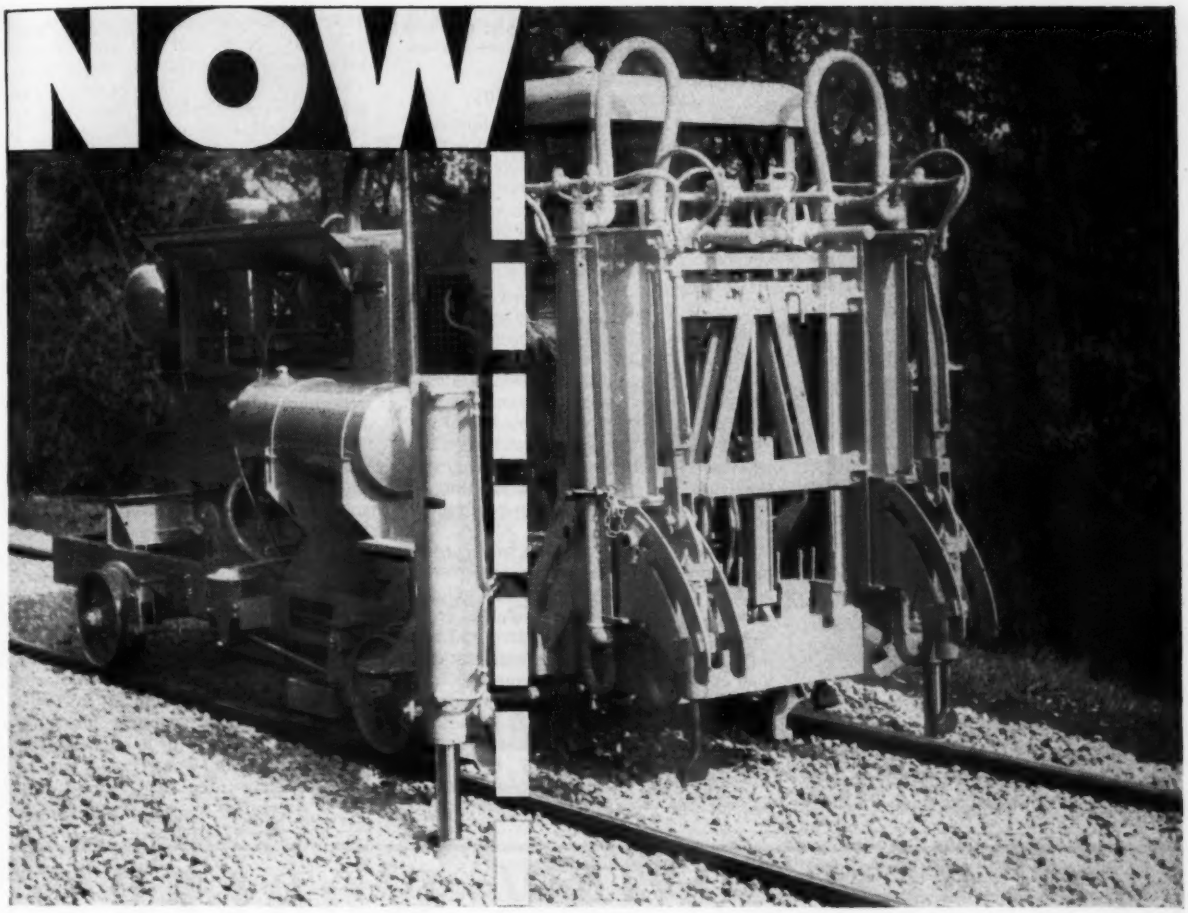
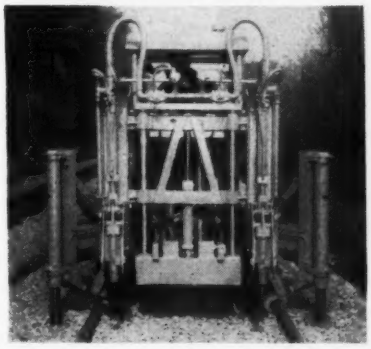


only machine which will *HOLD GRADE* for any tamper

Machine tamps to grade with no need for over-raising, using the same heavy-duty guns as the McWilliams Multiple Tie Tamper. Speed and ballast compaction are sufficient to hold grade ahead of any multiple tamper. In operation, it clamps to rails . . . raises track with hydraulic lifting cylinders . . . and tamps with four air-powered guns.

Four fixed-position tamping guns extend under the ties to provide superior ballast compaction.



McWILLIAMS

Jack TAMPER

RAILWAY MAINTENANCE CORPORATION • Pittsburgh 30, Pa.

What's the answer? (cont'd)

A mixture of various rail lengths could easily result in having the welds stop in such a position that they could not be reached by the grinder, or, if the grinder could reach a weld the normalizing station could not. If a separate stop had to be made for each operation, the cost per weld would increase substantially. It would be possible to make a welding line flexible enough so that the various stations could reach 20 ft each way from their normal position for 39-ft rails, but it would increase the cost of the assembly line, probably considerably more than it would be worth to accommodate the small percentage of short rails.

In making plans for a new welding line, it might be worth while to explore the possibility of making it flexible enough to handle any length rail, especially if the welding of cropped secondhand rails is planned.

Most roads are set up to handle just the 39-ft lengths and ordinarily they lay the short rails in some convenient spot using angle bars.

Biographical briefs (cont'd)

(*Continued from page* 10)

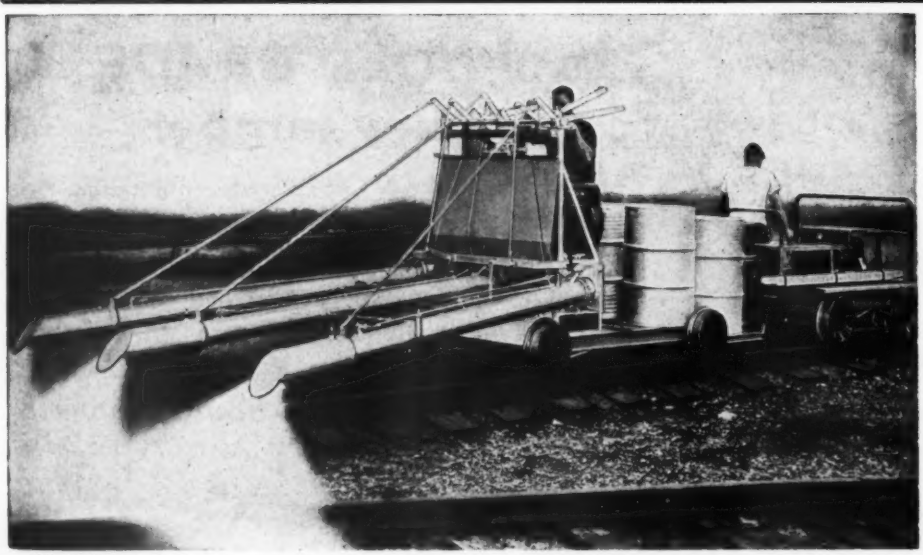
track. In 1928 he was appointed supervisor of track, holding this position until 1934 when he was given a special assignment to rehabilitate the Baltimore tunnles in connection with electrification of the railroad. During the same year he was appointed assistant division engineer and in 1936 he was promoted to division engineer. In 1941 he was assigned to special duty in the office of the chief engineer at Philadelphia. During the following year he was appointed engineer maintenance of way at Pittsburgh. In 1943 Mr. Gingerich was promoted to division superintendent. In 1944 he was named chief engineer maintenance of way and in 1954 he was appointed assistant chief engineer —maintenance system — the position he held at the time of his recent promotion.

Donald E. Rudisill, 57, who was recently promoted to assistant chief engineer maintenance of the Pennsylvania at Philadelphia (*RT&S*, Jan., p. 10), graduated from Gettysburg College and entered railroad service with the Pennsylvania as a draftsman in March 1923, later becoming a rodman. In February 1927 he was promoted to assistant supervisor of track, serving in that capacity until he was named supervisor of track in August 1929. In December 1930 he was named supervisor of track (special duty) at Philadelphia. In May 1932 he was appointed supervisor of track at Buffalo, N. Y. and was transferred to Steubenville, Ohio, in April 1933. From 1938 until 1943 he served as division engineer at various locations, then being appointed engineer maintenance of way. In June 1947 he was promoted to chief engineer maintenance of way of the New York Zone and in May 1949 was named assistant chief engineer maintenance of way of the Central Region. He was promoted to chief engineer maintenance of way of the Western Region in June 1952, and in November 1955 was named engineer maintenance of way, system, which he held until his recent promotion.

Warren C. Hillman, 64, who was recently promoted to supervisor bridges and buildings on the Clinchfield at Erwin, Tenn. (*RT&S*, Jan., p. 10), entered railroad service in 1922 as a bridge and building carpenter on the Clinchfield. Later that year he was promoted to assistant bridge and building foreman, and in June 1929 he was named to bridge and building foreman. In July 1944 he was promoted to master carpenter—the position he held at the time of his recent promotion.

Gordon W. Hupp, 33, who was recently appointed supervisor welding and work equipment on the Clinchfield at Erwin, Tenn. (*RT&S*, Jan., p. 10), entered the service of the Clinchfield in April 1951 as assistant track welder. He was appointed welder foreman in October 1952, and in September 1956 he was named as-

CUT WEED CONTROL COSTS WITH A . . . WOOLERY



A great many millions of dollars have been spent keeping roadbeds clear of weeds—and also for keeping retarders and switches open in the winter.

The Woolery PB-B—a versatile, flexible yard or on-the-line weed burner does these jobs WITHOUT FUSS—AND HAS BEEN DOING THEM FOR YEARS! A good example of what we mean: It destroys all weeds COMPLETELY (due to individually controlled burner arms for raising and lowering as required by ground contour) in a 15-foot swath on one trip and—with burner arms extended on return trip—burns a 25-foot swath! YET THE PB-B CAN BE TAKEN OFF TRACK BY ONLY TWO MEN!

Small, light, inexpensive—towed by a motor car, the PB-B is the ideal burner for yard work—and in many cases BETTER than larger burners for on-the-line work. Can be put on the job FASTER! (Three other Woolery burners in larger sizes available.)

Model PB-B
WOOLERY WEED BURNER trailer type (shown above) can be towed by motor car. Three burners clear a swath 15 feet wide on first trip and if required can be widened to 25 feet with burners extended on second trip.

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MAKE THIS "SWITCH" AT SWITCH POINTS

to get DOUBLE PROTECTION from TROUBLE

DOUBLE GUARD this trouble spot

MACK REVERSIBLE SWITCH POINT PROTECTORS

Perhaps you have never realized that the point of the switch rail (which is the weakest part of the switch) receives the maximum impact and wear in deflecting wheels at switches! More and more railroads are double-guarding this trouble spot by installing Mack Switch Point Protectors, which make switch points serve up to 10 times longer than when unprotected—4 to 5 times longer on the original application . . . and then for another equal period when the protectors are removed, reversed and reapplied.

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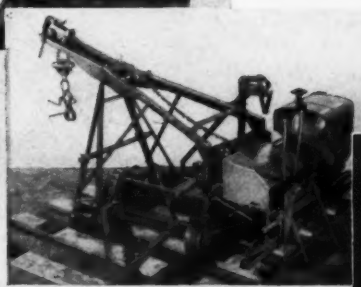
Division of Poor and Company
RAILWAY EXCHANGE BUILDING - CHICAGO 4, ILLINOIS

MECO RAIL AND FLANGE LUBRICATOR
Doubles to quadruples curve rail and locomotive wheel flange life by reducing friction between rails and wheel flanges on curves. Also makes possible higher speeds with greater safety.



MECO POWER RAIL LAYER
Reduces labor cost to a minimum in laying Standard Rails, Long Rails or Continuous Welded Rail. Operates efficiently with large gang of 100 men or more and requires a machine crew of only 3 or 4 men.

BRUSH CUTTER
Cuts right-of-way maintenance costs. One operator with the new, light-weight, Southworth can do the work of eight men using brushhooks or scythes. Extreme maneuverability, "work horse" power, light-weight are important advantages.

R-1315-RRR

Biographical briefs (cont'd)

sistant water supply and equipment maintainer—the position he held at the time of his recent promotion.

C. E. Whitmore, Jr., 32, who was recently promoted to assistant engineer of construction on the Richmond, Fredericksburg & Potomac at Richmond, Va. (*RT&S*, Jan., p. 10), graduated from Virginia Polytechnic Institute and entered the service of the Richmond Fredericksburg & Potomac in July 1947 as an engineering aide at Richmond, Va. He was transferred to Alexandria, Va. in July 1949, and in July 1951 he was promoted to junior engineer at Richmond. Later he served as assistant supervisor of track and supervisor of track at Richmond. In February 1955 he was transferred to Fredericksburg, Va., where he held the position of supervisor of track until his recent promotion.

John T. Ward, 40, who was recently promoted to assistant chief engineer of the Seaboard Air Line at Norfolk, Va. (*RT&S*, Feb., p. 10) graduated from the University of Virginia and entered railroad service in January 1943 as assistant to division engineer on the Seaboard at Raleigh, N. C. In October 1944 he was promoted to assistant division engineer at Raleigh, and from October 1947 until May 1952 he served as office engineer—maintenance of way at Norfolk. In June 1952 he was appointed principal assistant engineer at Norfolk—the position he held at the time of his recent promotion.

Palmer H. Swales, 31, who was recently promoted to chief engineer of the Bangor & Aroostook at Houlton, Me. (*RT&S*, Jan. p. 10), received his B.S. degree in civil engineering from the University of New Brunswick, and began railroading with the B&A in 1946 as a brakeman. During the summer seasons he worked as an assistant rodman. In 1949 he was named assistant engineer at Houlton, and in 1952 was appointed principal assistant engineer. While serving in the latter capacity, he also functioned as chief engineering officer in the absence of the chief engineer. In 1954, Mr. Swales was transferred, in accordance with company training policy, to the position of assistant to the mechanical superintendent, and was made division master mechanic at Oakfield, Me. in 1956—the position he held at the time of his recent promotion.

R. A. Van Ness, 65, who has retired as system bridge engineer of the Santa Fe (*RT&S*, Feb., p. 10), was born at McLean, Ill. He was educated at Ohio Northern University, graduating with a Bachelor of Science Degree in civil engineering in 1914. He entered Santa Fe service in the bridge department at Chicago in April 1917. Following overseas service as a captain in World War I, he returned to the railroad where he worked in a variety

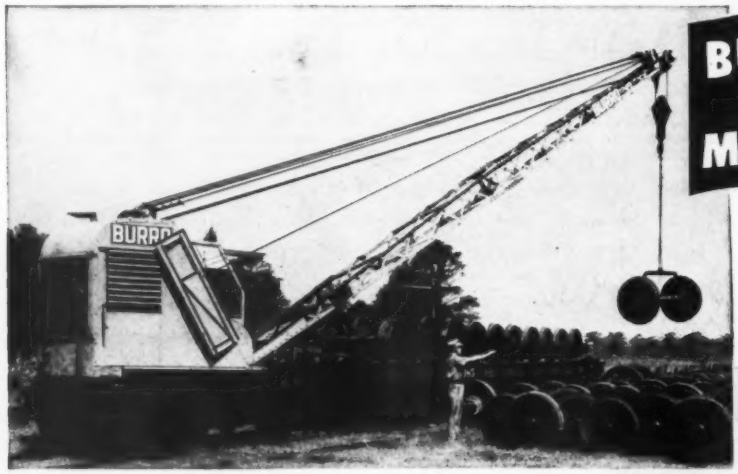
Palmer H. Swales
B&A

R. A. Van Ness
Santa Fe

of positions in the engineering department throughout the system. He had served as system bridge engineer at Chicago since 1929.

Mervyn B. Martin, who was recently appointed division engineer of the Canadian National at Campbellton, N. B. (*RT&S*, Mar., p. 10), graduated from the University of New Brunswick with a B.S. degree in civil engineering and began railroading in 1948 as an instrumentman during construction of the Prince Edward Island car ferry terminals. Later he served on the Edmundston and Campbellton divisions. He was appointed assistant division engineer at Moncton in 1951 and was transferred to Edmundston in 1953, where he remained as assistant division engineer until his recent promotion.

Charles F. Parvin, 45, who was recently promoted to engineer maintenance of way



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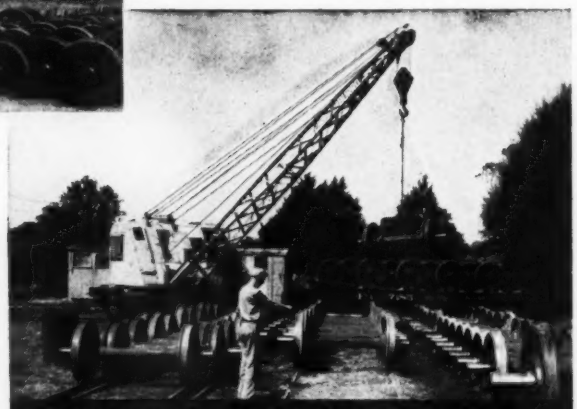
means...
MORE EARNING POWER

Unloading car wheels with a Burro. The Burro moved the flat car into position and will haul it away when wheels are unloaded.



This job—handling wheel assemblies in and out of storage—won't support high costs. That's why a Burro is doing the job.

***Any* job—on the line, in the yards, or Stores Department—can be done profitably with a Burro because Burros are fast, efficient workers with hook, magnet, tongs, bucket or dragline. Fast travel speeds and heavy draw bar pull enable the Burro to go to the job in a hurry—and even haul its own cars with it!**

Write for Bulletins and more information about Burro cranes. There is no obligation.

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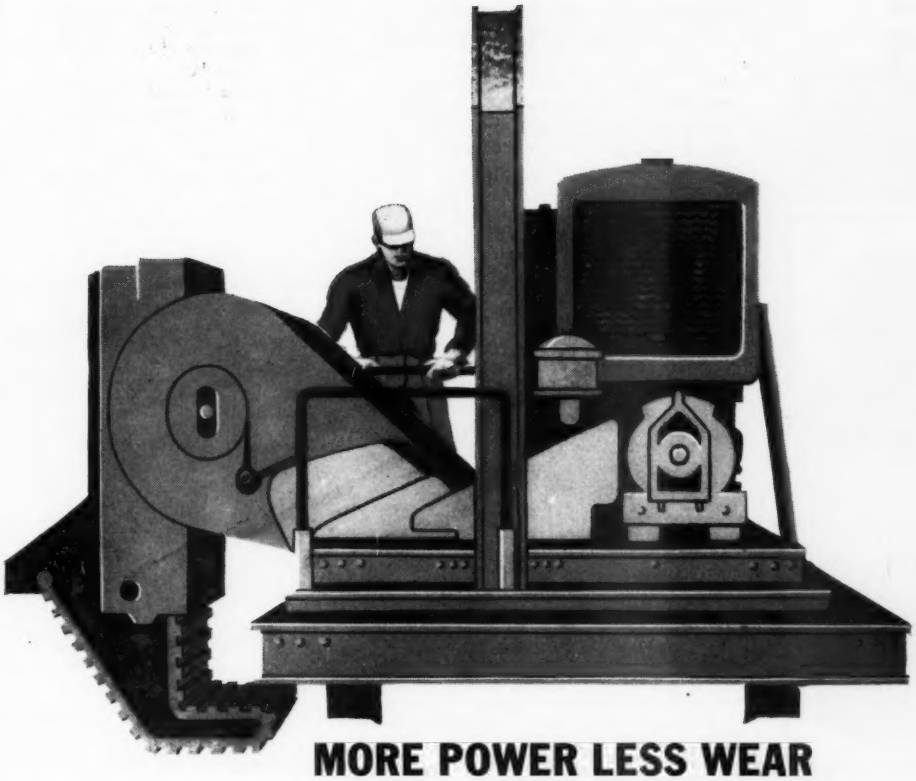

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New Essolube HD offers outstanding detergency properties —plus improved oxidation stability and bearing corrosion resistance—for both gasoline and diesel maintenance-of-way equipment. This was proved in extensive laboratory and field tests prior to its introduction. Under *low*-temperature conditions, Essolube HD markedly reduced sludge deposits. And under *high*-temperature conditions, it reduced piston varnish and top ring deposits to a new low. ¶ Such outstanding all-temperature detergency keeps engines cleaner longer...increases power, reduces wear, lengthens time between overhauls and extends engine life. ¶ Because versatile Essolube HD...is ideally suited for almost all maintenance-of-way gasoline and diesel engines, savings can be shown on inventory and handling. ¶ For the full story on new Essolube HD, call your local Esso office or write:

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RAILROAD PRODUCTS

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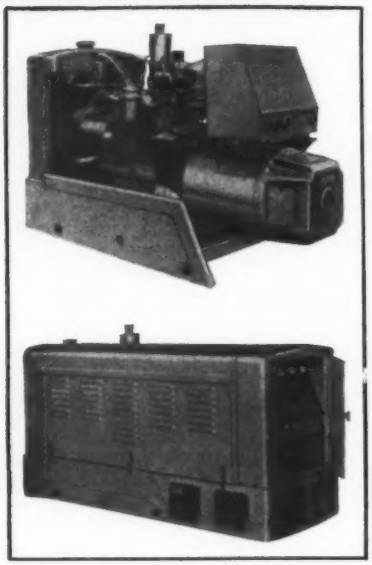

Onan develops new low-cost standby plants

Water-cooled units in 10 and 15 KW sizes meet rigid requirements

A new series of water-cooled electric plants makes Onan reliability and advantages available at significantly lower prices. The new units are powered by the same rugged, industrial-type engines used on more expensive plants. They have close inherent voltage regulation, operate on either gas or gasoline, and are equipped with all necessary controls and instruments, and high water temperature cut-off. Standard Onan accessories are available.

The Onan revolving armature, all-climate generator is direct-connected and self-aligning. All standard voltages are available. Both sizes are offered unhoused or with handsome weatherproof steel housings.

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ELECTRIC PLANTS

D.W. ONAN & SONS INC.
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Minneapolis 14, Minnesota

Biographical briefs (cont'd)

and structures of the Pennsylvania at Philadelphia (*RT&S*, Jan. p. 10), graduated in civil engineering from the University of Michigan. He started railroading in July 1934 with the PRR as an assistant on the engineering corps at Ft. Wayne, Ind., and in October 1935 was transferred to Chicago. From February 1937 until June 1941 he served as assistant supervisor at Aspinwall, Pa., Niles, Ohio, Harrisburg and Lancaster, Pa. He was promoted to supervisor of track at Harrisburg in June 1941 and was transferred to North Philadelphia, Pa., in May 1944. In July 1948 he was appointed assistant division engineer on the Philadelphia Terminal division and was promoted to division engineer of the Wilkes Barre division in March 1949. Later that year he was named assistant division engineer on the Susquehanna division. In April 1951 he was appointed engineer maintenance of way and structures on the Washington Terminal division. In the following year, Mr. Parvin was appointed division engineer on the Middle division and was named engineer maintenance of way on the Western region in September 1955. In November 1955 he was appointed regional engineer, Northwestern region—the position he held at the time of his recent promotion.

R. G. Maughan, 36, who was recently promoted to assistant to chief engineer of the Grand Trunk Western at Detroit, Mich. (*RT&S*, Feb., p. 10), graduated from the University of Toronto with a B.S. degree in civil engineering. He entered railroad service with the CNR at Toronto in November 1945 in the bridge engineers office, serving in various capacities from structural designer to assistant bridge engineer. In February 1956 he was named bridge engineer at Moncton, N. B. —the position he held at the time of his recent promotion.

George F. Nigh, 46, who was recently appointed division engineer on the New York, Chicago & St. Louis (Nickel Plate) at Frankfort, Ind. (*RT&S*, Feb., p. 10), graduated in civil engineering from Ohio State University. He began his railroad career in October 1940 with the Nickel Plate as an instrumentman at Dunkirk, N. Y. In February 1941 he was transferred to the division office in Conneaut, Ohio, and was promoted to assistant engineer at that location in December 1943. In March 1950 he was named assistant division engineer of the Clover Leaf district at Frankfort, Ind. Later that year he was made resident engineer on engine terminal construction at Chicago. In October 1951 he returned to the position of assistant division engineer at Frankfort where he remained until his recent promotion.

R. A. Carr
NRAA

J. B. Templeton
NRAA

Association News

Northwest Maintenance of Way Club

The April meeting will be held on the 24th. The speaker will be W. B. Blix, manager of the Railroad Equipment division, Nordberg Manufacturing Company, who will speak on "Current Railroad Equipment and Methods." The meeting will be held, as usual, at the Midway Civic Club, 1931 University Avenue, St. Paul, Minn.

Maintenance of Way Club of Chicago

The program of the April meeting, which will be held on the 28th, will consist of two principal features. One feature will be an address on research by G. M. Magee, director of engineering research, Association of American Railroads. The other feature will be a discussion of the different methods of butt welding rails.

Officers for the ensuing year will be elected at this meeting, which will be held, as usual, at the Hamilton Hotel, Chicago.

National Railway Appliances Association

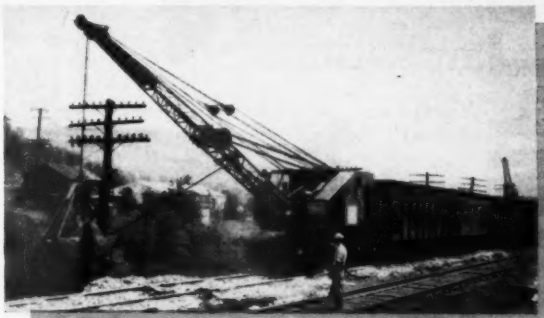
New officers were elected at a meeting of the association held on March 11 at Chicago. R. A. Carr (Dearborn Chemical Company) was advanced from vice-president to president; J. B. Templeton (Templeton, Kenly & Co.) was moved up from treasurer to vice-president; Kenneth Cavins (Fairmont Railway Motors, Inc.) was promoted from secretary to treasurer; and J. P. Kleinkort (American Brake Shoe Company) was advanced from director to secretary. Two new directors were elected to serve three-year terms., They are: R. C. Schulze (P & M Co.), and T. Y. Gehr (Pullman-Standard Car Manufacturing Company.).

In addition to routine business a number of revisions in the constitution and by-laws were approved. The most important of these was one that provides for the election of officers annually. Previously, officers were elected only during exhibit years, or at three-year intervals.

Koehring® 205 truck crane speeds maintenance and material-handling

Consider what the high-speed mobility and extra capacity of this Koehring 205 truck crane can mean on your scattered maintenance, construction, material-handling work — out along the line, around shops, in yards, etc. It drives 30, 40 miles, or more, in less than an hour's time. Travel is unrestricted — overall width is only 8 feet. Axle load-distribution meets highway regulations in most areas, even when carrying 25-foot boom over the steering end.

With this mobile crane you're equipped to lift any load up to 15 tons (based on conservative 85% rating). It also handles ½ to ¾-yard clamshell bucket — does stockpiling, loads and unloads coal, chemicals, other bulk materials. Readily converts to dragline, pile driver, ½-yard shovel or hoe. To suit your working conditions, this Koehring 205 is available on a choice of truck, Cruiser®, crawler mounting — or self-propelled rail car. See Koehring distributor soon or send for more information.



Developed especially for the railroads, Koehring 205 self-propelled RailAid® travels on-track at speeds up to 20 m.p.h. Crane or excavator loads or unloads itself on ramp-equipped rail car in less than 10 minutes — sets car on or off-track. Propulsion car has 2-axle drive, airbrakes on all 4 standard-flange wheels. Wide car-well accommodates 16, 20 or 24-inch crawlers on Koehring 205 excavator or crane.

You have come to expect more work capacity in Koehring machines, and you get just that — on work trains (above) or on independent off-track operation. Check all sizes: shovels from ½ to 3 cubic yards — and cranes with heavy lift capacities up to 98 tons.

Mail to: KOEHRING Division, Milwaukee 16, Wisconsin

Send data on 205 with: ☐ *truck* ☐ *Cruiser* ☐ *crawler* ☐ *RailAid mounting*

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GET IN THE GROOVE!

WORLD'S MOST DEPENDABLE... SIMPLEX TRACK JACKS

Featuring non-slip double grooved toes for lining without digging!

- Most complete line — twelve models
- Available with malleable or aluminum alloy housings
- Large area (2½" x 3¼") lifting toe has non-slip grooves
- Lifting ranges from 5 inches to 19¼ inches
- Thumb guards and trips on both sides
- Lowest toe height—less digging or pounding to set jack

WORLD'S LARGEST MECHANICAL AND HYDRAULIC JACKS

SIMPLEX RE-NO-TROL UTIL-A-TROL JENNY ROL-TOL JACKS

TEMPLETON, KENLY & CO. • 2543 GARDNER RD. • BROADVIEW, ILLINOIS

"FLUSH" WITHOUT COUNTERSINKING

Lewis sealtite car bolts

"Wood engineered" for a smooth level-with-the-surface moisture tight seal without countersinking . . . Sealtite fins bear against wood on a radial plane to prevent turning when nuts are set. Available in Hot-Dip Galvanized finish for "Long Life Economy," in black for low first cost. Call, write or wire for sample prices.

Bolt available with Loktite Nut No. 2 or std. sq. (shown) and hexagon nuts.

Cross section of head from above, showing fins, bevel and shank.

All products are manufactured in the U.S.A. to A.S.T.M. specifications.

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Keep Cool, mister! with

ARCTIC BOY

portable water coolers

- Rugged Construction . . . good everywhere men work!
- Galvanized inset, hot dipped *after* forming for flaw-free finish!
- Large top opening, easy to ice, fill and clean.
- Send for complete information and booklet "Care and Use of Your Cooler." Write Dept. C-73.

QUALITY HEAVY METALWARE DeLuxe SCHLUETER MFG. CO. ST. LOUIS, MO.

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Supply Trade News

AIR REDUCTION — N. F. Moody, district manager at Boston, has been appointed district manager at Philadelphia. **H. F. Colt, Jr.,** assistant district manager at Philadelphia, replaces Mr. Moody in Boston. Both appointments were effective March 1.

Fred S. Downs, railroad sales representative for this company, has been appointed zone manager, railroad sales, Eastern region. He succeeds **C. B. Armstrong,** who has retired after more than 37 years of service.

AMERICAN CREOSOTING—This company, a subsidiary of **Union Bag—Camp Paper Corporation,** has announced the appointment of **Edward M. Cordon,** as sales representative. Mr. Cordon's activities will be concentrated in Kentucky and Southern Indiana.

AMERICAN HOIST & DERRICK—Richard J. Mills, regional manager of the Eastern District, has been promoted to general sales manager. Mr. Mills attended the University of Minnesota School of Engineering and Business and has served with American Hoist & Derrick for 12 years in various capacities.

Lee E. Coulter has been appointed assistant to the president. Mr. Coulter will continue his duties as assistant secretary of the company and as president of Machinery Investment Corporation, a wholly owned subsidiary. He has long been identified with administration of the company's sales department.

Kenneth F. Potter, chief mechanical engineer, has been named director of engineering. He succeeds **J. J. Hite,** who has been appointed to the newly created post of principal consulting engineer.

HUBER-WARCO—Larry J. Weiser, assistant purchasing agent of this company, has been appointed district sales representative. His territory includes the states of Wisconsin, Missouri, Nebraska, Iowa, South Dakota, North aDkota, Minnesota, Upper Peninsula of Michigan, southern Illinois and Manitoba and Saskatchewan in Canada.

FAIRBANKS, MORSE — Robert Aldag has been appointed manager of the Railroad

Lee E. Coulter
American Hoist

Richard J. Mills
American Hoist

No wait for track clearance *with "handyman" D Tournapull*

▲ Maneuverable D Tournapull climbs embankment, gives quick clearance for passenger train. Handy rig moves out from right-of-way in seconds; on most maintenance jobs machine can continue working while train passes.

When a call comes for emergency maintenance along your right-of-way, there's no wait for track clearance if you have a D Tournapull. This one-man maintenance machine starts immediately, travels along track embankment, cross-country, via highway, or takes short-cuts on access roads at speeds to 29.5 mph to reach the job site.

While your "D" runs to the emergency assignment, revenue traffic on your mainline proceeds without interruption. You will not have to shuffle schedules, notify special work crews, organize a work train, or impose sidetrack delays along the line. D Tournapull, with only one operator, may be all the help you'll need.

Useful on all maintenance

Handyman "D" can handle dozens of maintenance jobs along your right-of-way. This 9-yd. scraper cuts ditches, spreads ballast, builds sidings, widens roadbed, raises grade, does a wide variety of work . . . quickly, and at low cost. Equipped with bulldozer blade, machine does many light dozing jobs, slopes banks, stockpiles coal, backfills around culverts and crossings. If snow blocks crossings and roads, "D" can plow it with optional snow plow. In congested areas, snow can be loaded in scraper bowl and hauled away.

Replaces many machines, many men

Study your present maintenance-of-way equipment fleet: the loaders, haulers, and other tools needed, the trailers or flat cars required to carry these machines to the job. Count the number of men you employ for this work, the time lost shifting them from their regular jobs to special assignments. Figure the time it takes to get this equipment fleet organized, and the time traveling to and completing the job, plus the time required moving to the next work location.

Compare this loss of time and money with the cost of one D Tournapull and one operator. You'll find that one or more "D's" can greatly reduce your equipment cost, do more maintenance work, keep your work crews occupied where they can be of greatest value.

Why not get complete details on "Handyman" D Tournapull? Send for verified reports of "D" railroad performance on major rail lines.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-1157-RR-z

LETOURNEAU-WESTINGHOUSE COMPANY
Railroad Sales Division
Peoria, Illinois
A Subsidiary of Westinghouse Air Brake Company
Where quality is a habit

A-W Hydraulic Crane at work in Burlington Repair Yards at Lincoln, Nebraska.

This AUSTIN-WESTERN HYDRAULIC CRANE is our most useful tool

Says the foreman of the Burlington Lines repair yard at Lincoln, Nebr.

The Burlington Lines repair yard at Lincoln, Nebr., takes on some 125 to 170 freight cars a day, some of them requiring minor repairs, but many of them calling for a complete rebuilding job. It involves work on 175 axles a week as an average—quite a materials-handling problem.

Install Austin-Western Crane. "To solve the problem, our operating department installed an Austin-Western crane April 1, 1955," the foreman says. "It proved the answer to so many problems that in October of that year we ordered a second unit for this yard, which has been in operation for more than a year."

72% saving over manual job. He goes on to say: "Transporting a gondola car full of brake beams to the storage yard, 100 yards away, formerly took three men for unloading and two men for moving the beams—five men working 8 hours per car—a total of 40 man-hours.

"With the Austin-Western, the operator and his helper now do the job in 4 hours at a cost of 8 man-hours for the men and 3 man-hours for 4 hours' use of the crane, a total of 11 man-hours. A saving of 29 man-hours, in this case, means a better than 72% saving over the manual unloading operation. This Austin-Western Hydraulic Crane is our most useful tool."

Extremely versatile. "For transporting axles and wheels we use a special sling. The operator drops this over the axle and hooks it. Then at the end of the run he releases it. All without getting out of his cab. With an 8-ft. manual extension on the 18-ft. extensible boom, the operator can handle steel doors for box cars, often to the second track over, thus shortening the distance to the car under repair. . . . Unloading steel in almost any form from gondola cars is a daily chore of this crane. . . . Makes every heavy item in the repair yard more accessible and more speedily available. . . . Its greater precision in placing the load or holding a part while being welded or fastened is important, as in the case of the car doors, which are held in exact position. This is a big time-saver."

For the complete Burlington story, write for Gould Report No. 5607.

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

BALDWIN BLH LIMA-HAMILTON

Robert Aldag
Fairbanks, Morse

Gilbert E. Webster
National Lock Washer

Division. Mr. Aldag is a graduate of Purdue University where he specialized in railroad mechanical engineering. Following his college career, he served with the Erie and the Chicago, Burlington & Quincy. He has served with Fairbanks, Morse a number of years as a sales engineer and manager of the sales engineering department.

Obituary

Gilbert E. Webster, president of the National Lock Washer Company, died on March 3. Mr. Webster was born on November 23, 1900 at Odon, Ind. He had been identified continuously with the railroad field since 1918 when he entered the operating department of the Illinois Central. From 1923 to 1939 he was connected with the P&M Co. in sales capacities. He then entered the service of the National Lock Washer Company and served with it continuously until his death. From 1939 to 1944 he was railway sales manager, then becoming vice-president in charge of the spring washer division. He had served as president since 1950. At the time of his death, Mr. Webster was also serving as an executive or director of a number of other companies.

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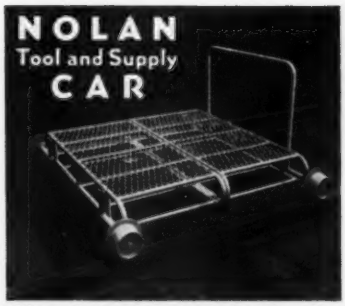

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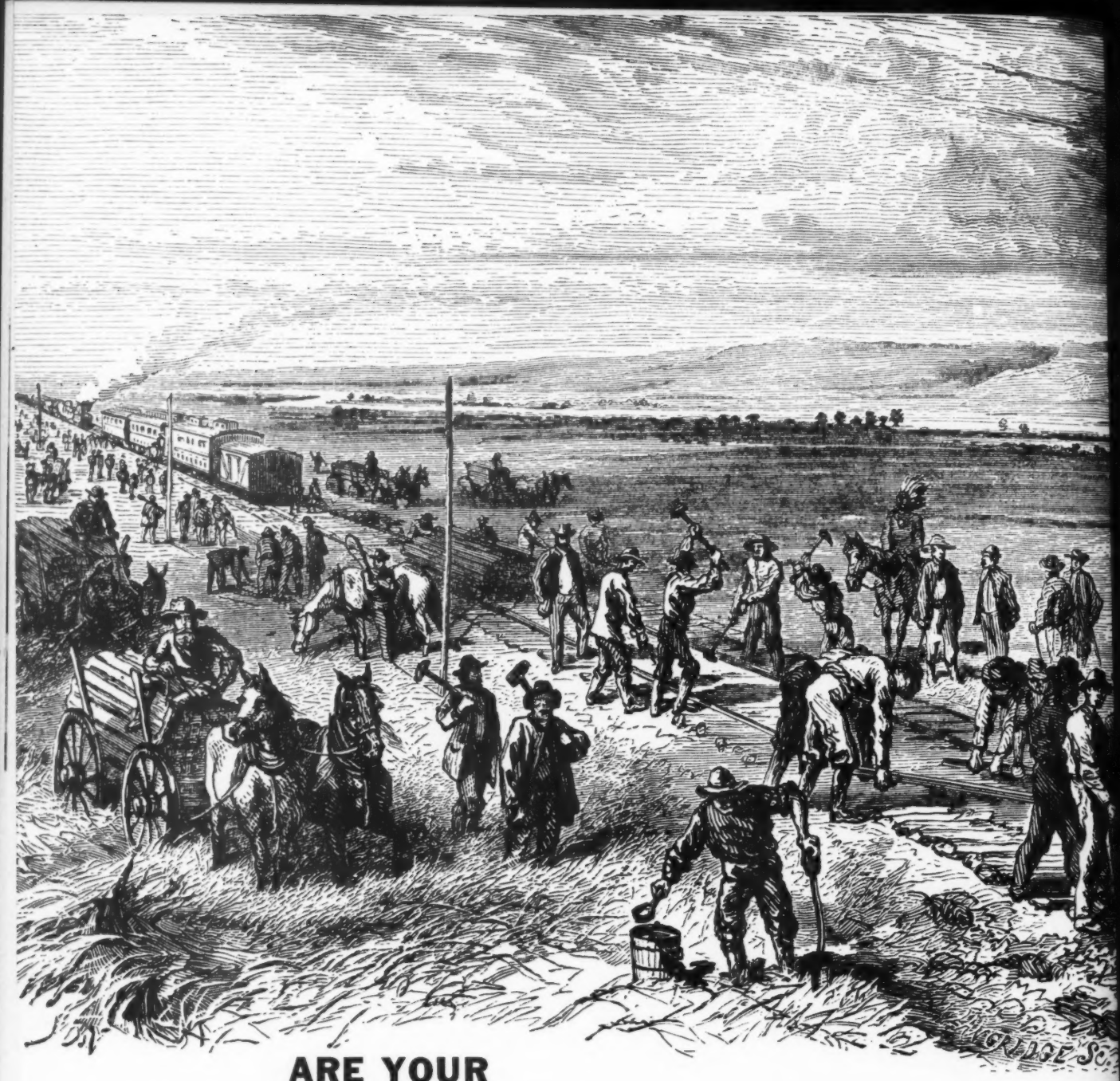

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